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JEAN-JACQUES ROUSSEAU, LES THÉORIES DE LA VOLONTÉ GÉNÉRALE ET DU PARTI-GUIDE ET LES TÂCHES DES UNIVERSITAIRES*

Accomplissant un agréable devoir, je voudrais vous dire, après être resté pendant dix ans éloigné de l'enseignement pour exercer des fonctions publiques, à quel point je suis convaincu que l'université est appelée dans tous les pays libres – aussi et peut-être surtout dans ses rapports avec les hommes politiques et les publicistes – à assumer une tâche qui lui est propre, une tâche d'une très haute portée, à savoir: rechercher indéfiniment et continuellement la vérité même, en dehors de toute considération de ses conséquences éventuelles. Il arrive trop souvent que des hommes politiques sont persuadés qu'ils doivent non seulement rechercher la vérité – et c'est là une conviction juste et féconde – mais aussi qu'ils sachent déjà «cette» vérité, la «seule» vérité, et qu'ils ne peuvent pas tolérer qu'elle soit niée. Or, il y a là un danger mortel.

Je ne connais pas de définition plus rigoureuse du danger auquel la civilisation est exposée que celle qu'en a donnée en résumé un grand homme suisse, Jean-Jacques Rousseau, en opposant la volonté «particulière» de l'individu à la volonté «générale» de la collectivité.

«En effet chaque individu peut, comme homme, avoir une volonté particulière, contraire ou dissemblable à la volonté générale qu'il a comme citoyen. Son intérêt particulier peut lui parler tout autrement que l'intérêt commun; ...peut lui faire envisager ce qu'il doit à la cause commune comme une contribution gratuite, dont la perte sera moins nuisible aux autres que le paiement n'en est onéreux pour lui»[1].

La volonté générale ne s'identifie pas à la volonté de tous.

«La volonté générale est toujours droite et tend toujours à l'utilité publique: mais il ne s'ensuit pas que les délibérations du peuple aient toujours la même

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* Discours à l'occasion de l'octroi du titre de docteur *honoris causa* par l'Université de Bâle.

1. *Du contrat social*, livre I, chap. 7.

rectitude. On veut toujours son bien, mais on ne le voit pas toujours: jamais on ne corrompt le peuple, mais souvent on le trompe, et c'est alors seulement qu'il paroît vouloir ce qui est mal»[2].

La volonté générale est-elle peut-être la somme algébrique des volontés particulières ou individuelles? Oui, si ce sont les individus qui décident; non, si la décision appartient à un groupe ou à autre.

Comment convaincre le citoyen, au moment où il prend sa décision, de faire bon marché de ses intérêts particuliers et des propositions des groupes qui intriguent pour l'inciter à voter d'une certaine manière plutôt que d'une autre?

«Comment une multitude aveugle, qui souvent ne sait ce qu'elle veut parce qu'elle sait rarement ce qui lui est bon, exécuteroit-elle d'elle-même une entreprise aussi grande, aussi difficile qu'un système de législation? De lui-même le peuple veut toujours le bien, mais de lui-même il ne le voit pas toujours. La volonté générale est toujours droite, mais le jugement qui la guide n'est pas toujours éclairé. Il faut lui faire voir les objets tels qu'ils sont, quelquefois tels qu'ils doivent lui paroître, lui montrer le bon chemin qu'elle cherche, la garantir de la séduction des volontés particulières, rapprocher à ses yeux les lieux et les temps, balancer l'attrait des avantages présents et sensibles par le danger des maux éloignés et cachés. Les particuliers voient le bien qu'ils rejettent; le public veut le bien qu'il ne voit pas. Tous ont également besoin de guides. Il faut obliger les uns à conformer leurs volontés à leur raison; il faut apprendre à l'autre à connoître ce qu'il veut»[3].

La nécessité d'avoir un guide est d'autant plus évidente qu'il faut le convaincre qu'il s'était trompé en adoptant comme volonté une opinion qui n'était pas réellement son opinion raisonnée.

«Quand on propose une loi dans l'assemblée du peuple, ce qu'on leur demande n'est pas précisément s'ils approuvent la proposition ou s'ils la rejettent, mais si elle est conforme ou non à la volonté générale qui est la leur; chacun en donnant son suffrage dit son avis là-dessus, et du calcul des voix se tire la déclaration de la volonté générale. Quand donc l'avis contraire au mien l'emporte, cela ne prouve autre chose sinon que je m'étois trompé, et que ce que j'estimois être la volonté générale ne l'étoit pas. Si mon avis particulier l'eût emporté, j'aurois fait autre chose que ce que j'aurois voulu; c'est alors que je n'aurois pas été libre»[4].

Toutefois, les hommes ne découvrent pas eux-mêmes, spontanément, quelle est leur volonté commune. Cela peut arriver dans de petites formations politiques telles que celles qui existaient dans les

2. *Idem*, livre II, chap. 3.
3. *Idem*, livre II, chap. 6.
4. *Idem*, livre IV, chap. 2.

cantons suisses à l'époque où vivait Rousseau et qui existent parfois encore où, dans des assemblées publiques, les électeurs élisent directement les magistrats et votent les lois.

« Quand on voit chez le plus heureux peuple du monde des troupes de paysans régler les affaires de l'Etat sous un chêne... (on) a besoin de très peu de lois; et à mesure qu'il devient nécessaire d'en promulguer de nouvelles, cette nécessité se voit universellement. Le premier qui les propose ne fait que dire ce que tous ont déjà senti et il n'est question ni de brigues ni d'éloquence pour faire passer en loi ce que chacun a déjà résolu de faire, sitôt qu'il sera sûr que les autres le feront comme lui »[5].

Mais la démocratie directe est une exception propre aux petits Etats, dans lesquels le peuple se réunit facilement et où chaque citoyen connaît tous les autres; où les coutumes sont simples, où il y a égalité entre les classes et les fortunes et où, en somme, la vertu domine.

De telles conditions n'existent pas dans la plupart des pays; et il n'y a pas de gouvernement qui soit plus à la merci des guerres civiles et des querelles intestines qu'un gouvernement démocratique, dans lequel le pouvoir n'appartient ni à un seul ni à un grand nombre, mais au peuple entier. Le gouvernement démocratique n'existe que là où, chaque jour de sa vie le citoyen, armé de force et de constance, se répète à lui-même: *Malo periculosam libertatem quam quietum servitium.*

« Un gouvernement si parfait ne convient pas à des hommes... S'il y avoit un peuple de dieux, il se gouvernerait démocratiquement »[6].

La volonté générale ne coïncide donc pas avec la décision prise par la majorité des citoyens et de leurs représentants. Il faut que:

- la décision soit prise par les individus, qui votent indépendamment les uns des autres, sans subir l'influence des groupes, des fractions et des partis qui sont ou qui peuvent se faire les défenseurs des intérêts particuliers;
- mais comme le citoyen veut le bien, qu'il ignore pourtant, il faut qu'il soit informé et guidé par ceux qui savent quel est le bien commun;
- le citoyen, ainsi informé, doit s'incliner devant le résultat de vote, même s'il est resté en minorité;

5. *Idem*, livre IV, chap. 1.
6. *Idem*, livre III, chap. 4.

– mais il n'a pas le droit de continuer à soutenir ce qu'il considère comme la vérité ni, s'il réussit à convaincre les autres, de transformer la minorité en majorité et de modifier la loi;
– non; le résultat de la décision lui fait seulement comprendre qu'il était dans l'erreur et qu'il ne connaissait pas la vérité. En votant une majorité, les votants n'ont pas exprimé une volonté générale. Celle-ci existait au préalable et ils se sont contentés de la reconnaître. Elle s'impose avec l'évidence d'un axiome;
– l'homme n'est vraiment libre que s'il se soumet à cette volonté générale qu'il n'a pas voulue mais qu'il n'a que reconnue parce qu'il a été éclairé par ceux qui savent.

Tel est le message du citoyen de Genève. Ce n'est pas le vote des citoyens, mais la reconnaissance des dieux qui exprime la volonté générale.

Rousseau n'a peut-être pas prévu que sa doctrine engendrerait de si graves conséquences. Par dizaines les dieux ont surgi et assumé le rôle de guides des peuples. De Robespierre à Babeuf, de Buonarroti à Saint-Simon, de Fourier à Marx, de Mussolini à Hitler, de Lénine à Staline, on a vu se succéder les guides appelés à enseigner aux peuples ignorants ce qu'était la vérité, ce qu'était la volonté générale dont ils n'avaient pas conscience; mais une fois que celle-ci eut été enseignée et reconnue, les peuples n'ont pas pu se refuser à agir en conséquence.

Les peuples ont appris que la liberté ne consistait pas, pour la minorité, d'abord à discuter, puis à s'incliner devant la volonté de la majorité, exception faite du droit de continuer à discuter et de réduire la majorité en minorité. Avec le système des dieux et des guides qui ont découvert la vérité vraie, les hommes ne se sentent libres que lorsque le guide envoyé par l'oracle divin a montré la voie de la vérité et condamné l'erreur. L'erreur, la déviation, l'opposition au principe posé dans les tables fondamentales de l'homme-guide, du parti dirigeant sont illicites, sont des délits contre la volonté générale et doivent être éliminés.

Peu importe la formule par laquelle l'oracle mène les hommes à la découverte de la vérité. Pour Rousseau et Robespierre c'est la «vertu», pour Saint-Simon la «religion de la science», pour Hitler la «suprématie du sang et de la race», pour Marx et Lénine la «dictature du prolétariat». Les formules changent et passent. La

doctrine de la vérité unique qui, une fois découverte, doit être reconnue et suivie, subsiste.

Est-il nécessaire d'affirmer que nous, qui faisons partie à un titre ou à un autre – enseignants ou étudiants – du corps universitaire, avons le devoir de combattre l'idée qu'un homme, un parti, un groupe, un collège a reçu d'un oracle, de lui-même ou d'une doctrine la mission d'être le guide des peuples? Est-il besoin d'affirmer que quiconque prononce ou écrit les terribles mots: «Je sais» – «Nous savons» – «Voilà la vérité» déclare en s'exprimant ainsi qu'il est étranger au monde de la science et qu'il n'appartient pas à la corporation mystique des universitaires enseignants ou étudiants? Il n'y a qu'une chose que nous sachions, c'est que nous ne savons pas. Nous n'avons qu'une devise: nous ne connaissons pas la vérité, mais nous la cherchons, nous ne sommes jamais sûrs de la posséder et nous recommencerons chaque jour à la rechercher, toujours insatisfaits et toujours curieux.

Celui qui dit «je sais», sait les vérités connues, celles qui font partie du patrimoine accumulé par des générations de penseurs, de chercheurs, d'hommes qui ont étudié le passé. Nous devons, certes, conserver pieusement ce patrimoine; mais il ne faut jamais s'imaginer qu'il est sacré et immuable. Les vérités admises et enseignées ne restent valables que si elles sont remplacées par des principes susceptibles d'expliquer un nombre important de faits et de les faire comprendre de la manière la plus simple. Les physiciens et les chimistes ont vu, en l'espace d'une génération, la matière même de leurs recherches se modifier profondément. Il n'y a pas de domaine du savoir humain où l'on n'ait constaté de changements importants dans les méthodes d'étude et dans les résultats des recherches entreprises. A quel changement profond n'assistons-nous pas dans le domaine de la science économique elle-même! Nous étudions encore les œuvres des grands économistes des siècles passés. C'est que rien de ce qu'ils ont écrit ne l'a été en vain; Cantillon et Galiani, Turgot et Adam Smith, Ricardo et Malthus, Gossen et List, Jean-Baptiste Say et Cournot, Roscher et Menger, Walras et Pareto, Böhm-Bawerk et Ferrara, Marshall et Keynes sont toujours vivants à nos yeux. Mais, les vicissitudes de l'existence m'ayant contraint de perdre pendant dix ans tout contact direct avec les livres nouveaux et les grandes revues scientifiques, je constate en ne faisant que les parcourir que ce n'est pas

seulement la méthode de discussion qui a changé, mais la matière même de la discussion. Seul le temps nous apprendra ce qui, dans les nouveaux ouvrages, mérite de survivre : il séparera le grain de l'ivraie. En attendant, il est certain, que des discussions ont eu lieu, qu'aucune vérité admise s'est échappée à la critique et à une revision minutieuse. C'est seulement ainsi que la science progresse, en respectant les conquêtes du passé, mais tout en les soumettant à une critique incessante et rigoureuse.

Nous ne devons pas nous lasser d'inculquer, hors de notre milieu, parmi les hommes politiques principalement, la leçon d'humilité dont nous donnons quotidiennement l'exemple. Il est juste que les hommes politiques suivent de loin les changements intervenus dans le domaine scientifique. Le gouvernement des peuples ne saurait être l'objet d'expériences incessantes et variables. Il est juste que les hommes politiques s'inspirent des conceptions qui dominaient les esprits de la génération précédente en matière économique et sociale. Il se pourrait que les idées neuves soient fausses et qu'elles ne résistent pas à la longue aux coups de ceux qui les repoussent. Le mal politique et social surgit quand les hommes d'action sont convaincus d'avoir découvert une vérité, de la posséder et d'être obligés de la réaliser. Les idées dont s'inspire la politique économique actuelle remontent pour une large part non à une génération antérieure, mais à trois générations et peut-être à un plus grand nombre encore. Le manifeste des communistes de 1848, la politique des nationalisations des Fabians en 1890 sont inspirés par des doctrines propres à l'âge de pierre dans l'histoire de la pensée en matière de politique économique. Là où ils ont été appliqués, ils n'ont pas abouti à une élévation matérielle et spirituelle des peuples supérieure au niveau que d'autres méthodes avaient permis d'atteindre. Ce niveau est au contraire resté sensiblement inférieur à celui qui a été obtenu au moyen de politiques concurrentes inspirées, avec des corrections opportunes, par les règles traditionnelles de l'économie de marché.

Il n'appartient pas à l'université de proclamer la supériorité de l'économie de marché sur l'économie dirigée, d'une organisation libérale de la société sur un régime socialiste. Notre rôle consiste à conseiller : personne ne doit prétendre servir de guide aux peuples ; personne ne doit affirmer être en mesure de connaître la volonté générale que les citoyens sont appelés, non pas à rechercher,

mais à reconnaître et, l'ayant reconnue grâce aux dieux-guides, à exécuter.

L'autocritique tendant à dénoncer l'erreur de ses propres déviations à l'égard de la vérité déclarée de l'homme-guide, du collège-guide, du parti-guide; la critique, confinée dans des limites fixées par l'homme et par les hommes qui se sont proclamés eux-mêmes de savants n'est pas de la critique; elle est soumission d'une manière abjecte au guide-tyran. L'université des enseignants et des étudiants rejette ce genre de critique. Elle a toujours et uniquement pour devise: la vérité se conquiert en reconnaissant que chaque vérité ancienne, chaque principe admis peut être faux. La vérité ne vit que parce qu'elle peut être niée. En étant libres de la nier à tout moment, nous affirmons chaque fois l'empire de la vérité.

Dogliani, Cuneo (Italia) LUIGI EINAUDI

RÉSUMÉ

L'université est appelée dans tous les pays libres à assumer une tâche qui lui est propre: rechercher la vérité.

Il n'est pas de définition plus rigoureuse du danger auquel la civilisation est exposée que celle qu'en a donnée Rousseau, en opposant la volonté «particulière» de l'individu à la volonté «générale» de la collectivité. Les hommes ne découvrent pas spontanément quelle est leur volonté commune, et la volonté générale ne coïncide pas avec la décision prise par la majorité des citoyens et de leurs représentants. Il faut que:

- la décision soit prise par les individus;
- mais comme le citoyen veut le bien, qu'il ignore pourtant, il faut qu'il soit informé et guidé par ceux qui savent;
- le citoyen doit s'incliner devant le résultat de vote;
- mais il n'a pas le droit de continuer à soutenir ce qu'il considère comme la vérité;
- en votant une majorité, les votants n'ont pas exprimé une volonté générale. Celle-ci existait au préalable et ils se sont contentés de la reconnaître;
- l'homme n'est vraiment libre que s'il se soumet à cette volonté générale qu'il n'a pas voulue mais qu'il n'a que reconnue parce qu'il a été éclairé par ceux qui savent.

Rousseau n'a peut-être pas prévu que sa doctrine engendrerait de si graves conséquences. De Robespierre à Babeuf, de Buonarroti à Saint-Simon, de Fourier à Marx, de Mussolini à Hitler, de Lénine à Staline, on a vu se succéder les guides

appelés à enseigner aux peuples ignorants ce qu'était la vérité, ce qu'était la volonté générale dont ils n'avaient pas conscience; mais une fois que celle-ci eut été enseignée et reconnue, les peuples n'ont pas pu se refuser à agir en conséquence.

Ceux qui font partie du corps universitaire, ont le devoir de combattre l'idée qu'un homme, un parti, un groupe, un collège a reçu d'un oracle, de lui-même ou d'une doctrine la mission d'être le guide des peuples. Quiconque prononce ou écrit les terribles mots: «Je sais» – «Nous savons» – «Voilà la vérité» déclare en s'exprimant ainsi qu'il est étranger au monde de la science et qu'il n'appartient pas à la corporation mystique des universitaires enseignants ou étudiants.

Le rôle des universitaires consiste à conseiller: personne ne doit prétendre servir de guide aux peuples; personne ne doit affirmer être en mesure de connaître la volonté générale que les citoyens sont appelés, non pas à rechercher, mais à reconnaître et, l'ayant reconnue grâce aux dieux-guides, à exécuter.

L'autocritique; la critique, confinée dans des limites fixées par l'homme et par les hommes qui se sont proclamés eux-mêmes des savants n'est pas de la critique; elle est soumission d'une manière abjecte au guide-tyran. L'université a toujours et uniquement pour devise: la vérité se conquiert en reconnaissant que chaque vérité ancienne, chaque principe admis peut être faux. La vérité ne vit que parce qu'elle peut être niée.

ZUSAMMENFASSUNG

Jean-Jacques Rousseau, die Theorien der «volonté générale» und der Führerpartei und die Aufgaben der Akademiker. Der Universität kommt in allen freien Ländern eine spezifische Aufgabe zu: Die Suche nach der Wahrheit.

Es gibt keine strengere Definition der Gefahr, welcher die Zivilisation ausgesetzt ist, als jene, die Rousseau gegeben hat, indem er den Willen des einzelnen der «volonté générale» (Allgemeinwillen) der Gesamtheit gegenüberstellte. Die Menschen vermögen ihren gemeinsamen Willen nicht spontan zu erkennen, und die «volonté générale» deckt sich nicht mit dem durch die Mehrheit der Bürger und ihrer Vertreter getroffenen Entscheid. Es ist vielmehr erforderlich:

- dass der Entscheid durch die einzelnen gefällt wird;
- da aber der Bürger das Gute will, wiewohl er es nicht kennt, muss er durch jene, die darüber Bescheid wissen, informiert und geleitet werden;
- der Bürger muss das Ergebnis der Abstimmung respektieren;
- aber er hat kein Recht, weiterhin das zu befürworten, was er als Wahrheit betrachtet;
- die Stimmbürger bringen durch einen Mehrheitsentscheid keine «volonté générale» zum Ausdruck. Diese bestand bereits vorher, und sie haben sie lediglich anerkannt;
- der Mensch ist nur dann wirklich frei, wenn er sich dieser «volonté générale» unterwirft, welche er nicht gewollt, sondern nur anerkannt hat, weil er durch jene, die Bescheid wissen, aufgeklärt wurde.

Rousseau hat vielleicht nicht vorausgesehen, dass seine Lehre zu solch schweren Konsequenzen führen würde. Von Robespierre zu Babeuf, von Buonarroti zu Saint-Simon, von Fourier zu Marx, von Mussolini zu Hitler, von Lenin zu Stalin sind sich die Führer gefolgt, um die unwissenden Völker zu lehren, was die Wahrheit und welches die «volonté générale» ist, von der sie keine Kenntnis hatten; aber nachdem diese einmal gelehrt und anerkannt worden war, konnten die Völker nicht umhin, entsprechend zu handeln.

Jene, die dem Lehrkörper der Universität angehören, haben die Pflicht, den Gedanken zu bekämpfen, dass ein einzelner Mensch, eine Partei, eine Gruppe oder ein Kollegium durch ein Orakel, durch sich selbst oder durch eine Doktrin den Auftrag erhalten habe, Führer der Völker zu sein. Wer die schwerwiegenden Worte «Ich weiss» – «Wir wissen» – «Das ist die Wahrheit» schreibt oder spricht, bekennt dadurch, dass er ausserhalb der Wissenschaft steht und nicht der mystischen Korporation der lehrenden und studierenden Akademiker angehört.

Die Akademiker haben die Aufgabe, den Rat zu erteilen: Niemand soll von sich behaupten, den Völkern als Führer zu dienen; niemand soll behaupten, er kenne die «volonté générale», die von den Bürgern nicht zu suchen, sondern anzuerkennen und auszuführen ist.

Die Selbstkritik, jene Kritik, welche die Grenzen beachtet, die durch den Menschen festgelegt wurden und durch diejenigen, die sich selbst als Gelehrte ausgegeben haben, ist keine Kritik; sie ist die klägliche Unterwerfung unter den Führertyrannen. Die Universität hat immer und einzig zum Leitsatz, dass die Wahrheit erobert wird, indem man anerkennt, dass jede frühere Wahrheit, jedes geltende Prinzip falsch sein kann. Die Wahrheit lebt nur deshalb, weil sie verneint werden kann.

SUMMARY

Jean-Jacques Rousseau, the theories of "volonté générale" and of the leader-party, and the duties incumbent upon university graduates. In all free countries, the universities are called upon to undertake an appropriate task: the search for truth.

There is no more precise definition of the danger to which civilisation is exposed than that which Rousseau gave in confronting the will of the individual with the will of the community ("volonté générale"). Men do not of their own accord discover what their will as a community is; and the "volonté générale" does not coincide with the majority decision of the citizens and their representatives. It is necessary that:

(1) the decision should be taken by the individuals;
(2) but, since the citizen wills what is good, without knowing what it is, he needs to be informed and guided by those who do know;
(3) the citizen must accept the result of a vote;
(4) but he has not the right to persist in upholding what he considers to be the truth;

(5) by obtaining a majority vote, the voters have not expressed the will of the community; that already existed and they have merely recognised it;
(6) man is really free only if he submits to this "volonté générale", which he has not himself willed and which he has recognised only because he has been enlightened by those who know.

Rousseau perhaps did not foresee that such weighty consequences would ensue from his doctrine. From Robespierre to Babeuf, from Buonarroti to Saint-Simon, from Fourier to Marx, from Mussolini to Hitler, from Lenin to Stalin, there has been a succession of leaders called upon to teach ignorant peoples what is the truth and what is the "volonté générale", of which they had no knowledge. But, once that will had been taught and recognised, the nations could not refuse to act in accordance with it.

Members of universities have the duty of combating the idea that a man, a party, a group or a college has received from an oracle, from a doctrine or by self-appointment the mission to be the leader of nations. Whoever pronounces or writes the ominous words: "I know"—"We know"—"This is the truth" stands thereby self-confined as a stranger to the world of learning and shows that he does not belong to the mystical corporation of university teachers and students.

The rôle of university men is an advisory one: nobody should set himself up as a leader of nations; nobody should claim to know the "volonté générale" which citizens are called upon not to seek but to recognise and, having recognised, to carry out.

Self-criticism, the criticism which is confined within limits set by man and by those men who have proclaimed themselves scholars, is not criticism; it is abject submission to the leader-tyrant. The university has always one sole motto: truth is achieved by recognising that every ancient verity, every accepted principle may be false. Truth lives only because it can be denied.

INDUSTRIELLE REVOLUTION*

Es gibt die bekannte Erzählung, dass der Tausendfüssler sich nicht mehr bewegen kann in dem Augenblick, wenn ihm die Frage gestellt wird, mit welchem Fuss er sich zuerst bewegt. In die gleiche Lage wird jeder wissenschaftlich Arbeitende versetzt, wenn Begriffe oder Theorien ihm fragwürdig werden, mit denen er bisher operierte, in der Meinung, sie seien allverständlich und allgültig.

Da es mir selbst mit dem Begriff der industriellen Revolution so ergangen ist, möchte ich Sie heute auffordern, mit mir gemeinsam über seine Entstehung, seinen Sinn und seine Reichweite nachzudenken. Als ich über die neue Etappe der industriellen Revolution geschrieben hatte[1], musste ich zunächst mit Erstaunen feststellen, dass anerkannte technische Autoritäten die Frage aufwarfen, ob es überhaupt eine industrielle Revolution gegeben habe und gebe. Und nachdem auf diese Art meine Aufmerksamkeit geweckt und ich zum Umschauen genötigt war, fand ich mit noch grösserer Überraschung, dass der für einen deutschen Wirtschaftshistoriker selbstverständliche Begriff ausserhalb des deutschen Sprachgebiets teils in seinem Sinn bestritten, teils bewusst gemieden wird. So dürfte reichlich Anlass dazu bestehen, sich darüber Rechenschaft zu geben, welche Bedeutung der Begriff geschichtlich und theoretisch besitzt; denn wie sollen wir ernsthaft von der Atomzeit als einer neuen Phase der industriellen Revolution sprechen dürfen, wenn wir nicht zuvor klären, ob es eine erste Phase überhaupt gegeben hat, oder, schärfer gesagt, ob es wissenschaftlich sinnvoll, ratsam, notwendig ist, die Periode der Industrialisierung seit etwa 1760 als industrielle Revolution – von heute aus gesehen: als erste Phase der industriellen Revolution zu bezeichnen.

I

Wenn wir allgemein von industrieller Revolution sprechen, so wird gemeinhin zunächst an die industrielle Revolution in England gedacht, deren Beginn um etwa 1760 gesetzt und deren Ende wech-

* Vortrag, gehalten anlässlich der Weltkraftkonferenz auf Einladung der Nationalökonomischen Gesellschaft am 19. Juni 1956 in der Universität Wien.

1. Vgl. *Kyklos*, Bd. VIII (1955), S. 1 ff.

selnd 1830 oder 1850 angenommen wird. Interessanterweise aber stammt der Begriff nicht aus England. Wenn die Ergebnisse einer amerikanischen Forscherin zutreffen[2] – sie haben alle innere Wahrscheinlichkeit für sich –, dann ist die Bezeichnung aufgekommen in dem Land, das seine politische Revolution als einen Markstein der Geschichte ansah und darum gern jeden Wechsel als Revolution etikettierte – in Frankreich. Dort werden schon 1806 technische Veränderungen in der Wollmanufaktur als «Revolution» bezeichnet, und in den zwanziger Jahren wurde «Revolution» als Schlagwort gebraucht, mit dem Reaktionäre und Romantiker, Liberale und Sozialisten alle auffälligen Unterschiede und Gegensätze in der Industrie ihrer Zeit benannten. Merkwürdigerweise findet sich, wenn ich recht sehe, weder das Schlagwort noch der Begriff bei SAINT-SIMON. Was insofern erklärlich wäre, als Industrie an sich für ihn das Signum der neuen Zeit und Industrie und Sozialismus gemeinsam für ihn das Signum seines dritten Reiches sind. «Tout pour l'industrie, tout par elle», was SAINT-SIMON schon 1817 als Motto wählte, sagt und will mehr als bloss «industrielle Revolution», enthält etwas von den messianischen Hoffnungen, die SAINT-SIMON selbst beseelten und die er seinen Schülern mitgab. Wort und Begriff finden sich auch nicht bei seinem englischen Zeitgenossen ROBERT OWEN. Aber dieser andere utopische Sozialist hatte als Textilindustrieller in Lanark den Vorgang miterlebt und mitgemacht, und so spiegelt er sich, wenn auch in anderen Worten, in seinen Schriften und Reden wieder: «This *change*», schreibt er 1815 von dem Bevölkerungswachstum, «has been owing chiefly to the mechanical inventions which introduced the cotton trade into this country». Und weiter: «The manufacturing system» – das heisst eben: die *neue* Industrie – «has already so far extended its influence over the British Empire, as to effect an essential *change* in the general character of the mass of the people»[3].

2. ANNA BEZANSON, "Early Use of the Term Industrial Revolution", *Quarterly Journal of Economics*, vol. XXXVI (1922), p. 343 ff.

3. Ich entnehme beide Zitate dem Vortrag von GEORGE NORMAN CLARK, *The Idea of the Industrial Revolution* (Glasgow 1953), durch den im angelsächsischen Sprachbereich die Diskussion über den Begriff der industriellen Revolution neu entbrannt ist. Vgl. zuletzt: W. WOODRUFF, "Capitalism and the Historians: A Contribution to the Discussion on the Industrial Revolution in England", *Journal of Economic History*, vol. XVI (1956), p. 1 ff.

Die Saint-Simonisten kamen in Frankreich erst in der Zeit des dritten NAPOLEON zum Zug, und die hochkapitalistische Industrie hat sich dort nur langsam durchgesetzt – die Revolution blieb in der ersten Hälfte des 19. Jahrhunderts noch an ihr politisches Ursprungsgebiet gebunden. Dies dürfte der Grund sein, aus dem die vielen Revolutionäre aller Völker sich in den zwanziger und dreissiger Jahren in Paris zusammenfanden – der Grund, aus dem selbst ein solch scharfer Beobachter und hellsichtiger Deuter wie HEINRICH HEINE wohl die politischen Umstürzler der Gegenwart und Zukunft, die Propheten und Gläubigen des Kommunismus in ihrer ganzen Kraft und Gefahr wahrnahm, doch die innere Verbindung von industrieller und gesellschaftlicher Revolution nicht erkannte. Dies auch der Grund, aus dem Adolphe Jérôme BLANQUI, Schüler von J. B. SAY, doch später Anhänger von SAINT-SIMON, 1838 in seiner *Geschichte der politischen Ökonomie in Europa* erklärte: Während die französische Revolution ihre grossen Experimente auf einem Vulkan gemacht habe, habe England die seinen auf dem Gebiet der Industrie begonnen. Und BLANQUI gelangt bereits zu dem Urteil: Kaum dem Gehirn der genialen Watt und Arkwhright entsprungen, habe die industrielle Revolution England in Besitz genommen.

Das Urteil ist richtig. Es ist das Urteil eines kontinentalen Europäers, der von aussen mehr Überblick besass als die Handelnden und die Betrachtenden in England selbst. ADOLF HELD hat in den heute vergessenen *Zwei Bücher zur sozialen Geschichte Englands*, einem, bei oftmaliger Masslosigkeit des Urteils, genialischen Werk, einer der bedeutendsten Leistungen der jüngeren Historischen Schule, festgestellt, «dass die Schriftsteller in der Zeit der grossen gewerblichen Umwälzung selbst das Wesen der unter ihren Augen vorgehenden Tatsachen nicht erkannt, ja selten geahnt haben»[4]. Aber wenn man die Werke der Zeit zur Hand nimmt, etwa die *Philosophy of Manufactures* von URE oder seine *History of Cotton Manufacture*, und wenn man die politischen und geistigen Strömungen Englands in dieser Zeit analysiert, hier Manchestertum, dort Chartismus, daneben CARLYLE, dann ist sehr klar, warum in England selbst das Phänomen nicht in seiner vollen Bedeutung gesehen wurde.

4. Das Werk wurde aus dem Nachlass des in jungen Jahren verunglückten Verfassers herausgegeben von GEORG FRIEDRICH KNAPP (Leipzig 1881). Die zitierte Stelle *a.a.O.*, S. 406.

Auf der einen Seite schreckte der allgemeine Hang zu Utilitarismus und Materialismus – CARLYLE's *Chartism*, *Past and Present* ist in seiner besinnlichen Überlegenheit noch heute eindrücklich. Auf der anderen Seite stand man bestürzt der anscheinenden Auflösung des Staates gegenüber – die Schriften des jungen DISRAELI, der den Gegensatz zwischen Arm und Reich zum Kampf zweier Staaten sich entwickeln sieht, enthalten dieses Bild eines gescheiten politischen Diagnostikers. Aber HELD seinerseits, politisch voreingenommen und ein sozialer Quietist wie viele seiner Zeitgenossen im «Verein für Sozialpolitik», hat nicht gesehen, dass ein scharfsichtiger Beobachter schon 1845 alle wesentlichen Elemente erkannt hatte. Diesem einen hat er vorgeworfen, dass er die Leiden der Arbeiter «nicht als die traurigen, aber aufhebbaren Folgen eines Übergangsstadiums, sondern als die notwendig wirkenden Ursachen einer... Revolution betrachtete». Dieser eine war auch ein kontinentaler Europäer, ein Barmer Fabrikant, der nach England verschlagen war, ein Mensch des Wuppertals, einer Heimat von Wiedertäufertum und Pietismus und Kommunismus, war FRIEDRICH ENGELS.

II

Die Einleitung von *Die Lage der arbeitenden Klasse in England* sagt in prägnanten Worten sofort das Entscheidende: «Die Geschichte der arbeitenden Klasse in England beginnt mit der letzten Hälfte des vorigen Jahrhunderts, mit der Erfindung der Dampfmaschine und der Maschinen zur Verarbeitung der Baumwolle. Diese Erfindungen gaben bekanntlich den Anstoss zu einer industriellen Revolution, einer Revolution, die zugleich die ganze bürgerliche Gesellschaft umwandelte...»[5]. Als Kennzeichen der industriellen Revolution wird hier also richtig ihr doppelter Aspekt erkannt – die Untrennbarkeit des ökonomischen und des soziologischen Vorgangs. Woraus für den Betrachter folgt: die Untrennbarkeit von Wirtschaftstheorie und Wirtschaftssoziologie und Wirtschaftspolitik.

5. Zitiert nach der zweiten Auflage, Stuttgart 1892, S. 1. Da man auf «bürgerlicher» Seite noch immer sich vor der marxistischen Literatur bekreuzigt, statt sie sehr gründlich zu studieren, ist die Vorrede dieser zweiten Auflage, die hier für unsern Zusammenhang keine Bedeutung besitzt, fast unbekannt – zum grossen Schaden der Gegenseite!

Was ENGELS hier für England feststellt, haben dann ENGELS und MARX zu jenem hohen Lied der allgemein revolutionären Rolle und Leistung der Bourgeoisie erweitert, das ins Kommunistische Manifest Eingang gefunden hat. «Die Bourgeoisie», heisst es dort, «hat in der Geschichte eine höchst revolutionäre Rolle gespielt. Die Bourgeoisie, wo sie zur Herrschaft gekommen, hat alle feudalen, patriarchalischen, idyllischen Verhältnisse zerstört... Die Bourgeoisie kann nicht existieren, ohne die Produktionsinstrumente, also die Produktionsverhältnisse, also sämtliche gesellschaftlichen Verhältnisse fortwährend zu revolutionieren... Die Bourgeoisie reisst durch die rasche Verbesserung aller Produktionsinstrumente, durch die unendlich erleichterten Kommunikationen alle, auch die barbarischsten Nationen, in die Zivilisation... Die Bourgeoisie hat in ihrer kaum hundertjährigen Klassenherrschaft massenhaftere und kolossalere Produktionskräfte geschaffen als alle vergangenen Generationen zusammen. Unterjochung der Naturkräfte, Maschinerie, Anwendung der Chemie auf Industrie und Ackerbau, Dampfschifffahrt, Eisenbahnen, elektrische Telegraphen, Urbarmachung ganzer Weltteile, Schiffbarmachung der Flüsse, ganze aus dem Boden gestampfte Bevölkerungen – welches frühere Jahrhundert ahnte, dass solche Produktionskräfte im Schosse der gesellschaftlichen Arbeit schlummerten».

Es ist gewiss begreiflich, dass die bürgerlichen Ökonomen nicht gern aus dieser Quelle schöpften und schöpfen; denn diese hymnische Schilderung dient ja im Kommunistischen Manifest nur dazu, um die politische Prognose, um das Kommen des Kommunismus wissenschaftlich zu fundieren. Aber auch wenn man den Kommunismus als Politik und als Weltanschauung ablehnt – wäre es nicht doch gut, ja, wäre es nicht gerade dann notwendig, sich den Wahrheitsgehalt dieser Darstellung anzueignen, sich ihre Reichweite und ihre Grenzen klarzumachen? Wird es dann nicht ein etwas peinlicher Ausdruck eines nicht allzu guten Gewissens, wenn Wirtschaftshistoriker versuchen, «industrielle Revolutionen» schon im 11., 13., 15., 17. Jahrhundert zu entdecken?[6] Was natürlich nur möglich ist, wenn man das gesellschaftlich-politische Element streicht und mehr oder minder beachtliche technische Veränderungen als industrielle Revolutionen qualifiziert. Wird nicht der Quietismus von HELD und des

6. Vgl. die Angaben bei G. N. CLARK, *a.a.O.*, S. 12f.

ganzen Historismus dann zu einem etwas armseligen Palliativ, das, indem es die Augen vor der ganzen Wucht und der ganzen Gefahr der Wirklichkeit verschliesst, schon darum zur Unwirksamkeit verdammt ist? Aber wird nicht auch das, was man seit MENGER, JEVONS, WALRAS als Theorie oder «Economics» oder «Katallaktik» bezeichnet und was heute als Schreinerei von Modellen verstanden und ausgebaut wird, als Flucht aus der politischen Ökonomie in eine wirklichkeitsferne Abstraktion recht fragwürdig?

Das ist gewiss nicht gesagt, um den alten Streit zwischen SCHMOLLER und MENGER wieder aufzuwärmen. Der hat seine Zeit gehabt. Ganz umgekehrt scheint mir deutlich zu werden, wie die beiden Kämpen letztlich auf sehr ähnlichem, bürgerlich-romantischem Boden standen und wie beide infolgedessen weit hinter dem zurückblieben, was als grosse Aufgabe gestellt war. Nicht zufällig sind die heute noch überlebenden Zeugnisse des Historismus die Werke von Männern, die keiner der historischen Schulen angehörten: ENGELS, MARX und LIST. Und nicht zufällig ist von den «Klassikern» wirkkräftig nur noch der letzte und grösste: KARL MARX, und nicht zufällig hat aus der Wiener Schule derjenige die stärkste Weltwirkung erlangt, der in Fortführung eines MARX-ENGELSschen Gedankens durch Einführung des Begriffs der «schöpferischen Zerstörung» die Theorie wieder in sich dynamisch, in sich revolutionär, in sich gesellschaftlich gestaltete: SCHUMPETER.

III

Aber es handelt sich heute und hier nicht um eine dogmengeschichtliche Analyse. Sondern indem wir den Begriff der industriellen Revolution wieder in seinem echten Gehalt herausstellen, wollen wir einerseits die Grundlage gewinnen, um seine Reichweite zu überprüfen, und andrerseits den Hintergrund erarbeiten, von dem allein aus erst gesagt werden kann, ob wir wirklich vor oder in einer *neuen* Phase der industriellen Revolution stehen. Der beste Weg zur Beantwortung der Kernfrage dürfte ein produktiver Umweg sein – ein Hinschauen auf die Formen, in denen man sich dem Ernst und dem Anspruch des Begriffes entzieht. Sir JOHN CLAPHAM, der repräsentative Wirtschaftshistoriker der letzten Generation in England, hat in seiner *Economic History of Modern Britain* den Begriff überhaupt

nicht gebraucht. Nach Ansicht von G. N. CLARK hat er ihn absichtlich vermieden[7]; ich würde sagen, er hat ihn genau so vermieden wie alle systematischen Begriffe und Ideen, da CLAPHAM als typischem Positivisten[8] nur seine berühmten Fragen «how large? how long? how often? how representative?» als wissenschaftlich beachtlich und beantwortbar erschienen. Anders geht T. S. ASHTON vor; er akzeptiert den Begriff, nein, die Worte, nennt sein 1948 erschienenes Buch *The Industrial Revolution 1760–1830* und weiss dann über sie nichts Besseres zu sagen als: die Phrase, der Ausdruck sei von einer grossen Zahl von Historikern verwandt und habe sich im allgemeinen Sprachgebrauch so eingebürgert, dass es pedantisch wäre, einen Ersatz anzubieten. Auf diesen beiden Wegen ist gewiss nicht weiterzukommen. Also lässt sich mit Aussicht auf Erfolg nur so vorgehen, dass man sich fragt: Wenn wir unter industrieller Revolution jene vom Bürgertum durchgeführte Revolution verstehen, welche den Feudalismus entthronte, die neuen technischen Mittel von Produktion und Transport in weltweitem Umfang zur Anwendung brachte und die gesamten gesellschaftlichen Verhältnisse umwälzte und neu gestaltete[9] – wo hat es dann überhaupt eine industrielle Revolution in diesem Sinn gegeben, welches waren ihre Formen und welches ihre Folgen?

Wenn wir die Frage so scharf stellen, dann gibt sie uns zunächst einmal ein heuristisches Mittel an die Hand. Es zeigt sich nämlich,

7. *A.a.O.*, S. 6.

8. Vgl. dazu meine Kennzeichnung der verschiedenen Typen der Wirtschaftshistoriker in «Sombart and the German Approach», Beitrag zur *Festschrift für A. P. Usher*, Tübingen 1956, S. 41 ff.

9. Aus diesem Grund kann ich auch die Verwendung des Begriffes in Titel und Text von W. O. HENDERSON, «The Genesis of the Industrial Revolution in France and Germany in the 18th Century», *Kyklos*, Bd. IX (1956), S. 190 ff., nicht akzeptieren. Dürfte ich dem Verfasser des ausgezeichneten Buches *Britain and Industrial Europe 1750–1870* (Liverpool 1954) vielleicht zu bedenken geben, dass SOMBARTS Unterscheidung zwischen Früh- und Hochkapitalismus und ihren spezifischen Industrien wirtschaftsgeschichtlich ihren sehr guten Sinn hat und dass nicht zufällig die Periode, die zuerst ADAM SMITH mit Merkantilismus bezeichnet hat, zeitlich sich wesentlich mit dem Frühkapitalismus deckt? Und sollte nicht auch er zugestehen können, dass die merkantilistische «Industrialisierung» unter Colbert, Friedrich II. und Joseph II. etwas *dem Wesen nach* Verschiedenes ist von der «Industriellen Revolution» des Kohle- und Eisenzeitalters, die von England ihren Ausgang nahm?

dass eine industrielle Revolution in diesem klar umschriebenen Sinn völlig eindeutig nur dort stattgefunden hat, wo ENGELS und MARX das Urbild ihres Begriffes gefunden haben, in England. Erkenntnistheoretisch liesse sich sagen: nur in England ist dieser Begriff ein «Realtyp», überall sonst ist er nur als «Idealtyp» verwendbar, und überall sonst sind daher die Abweichungen das geschichtlich Interessante! Auf dem Kontinent kommt dem englischen Urbild am nächsten die Entwicklung in Belgien und später in Frankreich. Aber schon in Deutschland fehlt ein wesentlicher Zug: Die alten Feudalmächte haben dort die Herrschaft nicht abgegeben, die Bourgeoisie hat sich nur auf ihrem eigensten Gebiet, der Industrie, durchgesetzt – die innere Schwäche, das Fassadenhafte des Wilhelminischen Reichs ebenso wie der plötzliche Zusammenbruch von 1918, lässt sich wesentlich hierauf zurückführen.

Verstärkt gilt dies für die alte österreichisch-ungarische Monarchie. Wer in jungen Jahren noch ihren Zauber erlebt hat, der wusste doch und sieht heute noch viel klarer: dass diese grossartige politische Schöpfung ihren Bestand und ihre Anmut und ihren Reiz ausschliesslich Kräften der Vorzeit verdankte. Als Ökonomen sollten wir uns aber nicht mit der Deutung der Historiker zufrieden geben, dass sie am Streit der Nationalitäten zusammenbrach, sondern müssen unterstreichen, dass der Gegensatz der Nationalitäten gerade auch durch die Unterschiedlichkeit verschärft war, in der die industrielle Revolution ihren Eingang fand, oder, richtiger formuliert: in der die technischen Elemente der industriellen Revolution sich durchgesetzt hatten. Ungarn war im wesentlichen feudaler Agrarstaat geblieben, in Böhmen und in Polen hatten moderne Industriemassierungen begonnen usw. Da also nicht wie in England die industrielle Revolution sozusagen das gesamte Land ergriff, hat sie nicht eine neue Bindung geschaffen, sondern die alte relative Gleichheit der Wirtschaftsbedingungen zerstört und die zentrifugalen, die staatsprengenden Kräfte verstärkt.

Es ist nicht notwendig, besonders herauszustellen, dass *diese* industrielle Revolution Russland nur am Rande berührt hat: MARX selbst hatte mit der Möglichkeit gerechnet, und dies wird heute allgemein verstanden, dass in Russland die Stufe der bürgerlichen Revolution ausfallen könnte, übersprungen werde. Dagegen muss noch hervorgehoben werden – eine Tatsache, von der sich weder

die Wissenschaft noch die Politik Rechenschaft gibt und die doch für das Verständnis der heutigen Entwicklung von allergrösster Bedeutung ist –, dass auch die Vereinigten Staaten keine industrielle Revolution erlebt haben.

IV

Diese Tatsache ist geschichtlich wie theoretisch in gleicher Weise bedeutungsvoll, und sie muss im Hinblick auf das wirtschaftliche Wachstum der unentwickelten Länder noch besonders hervorgehoben werden. Gäbe es nämlich das amerikanische Beispiel nicht, so wäre zu argumentieren: Der Aufbau der modernen Industrie erfordert gewaltige Kapitalien – ihre Bildung ist in jedem Fall nur unter grossen Opfern verschiedener Form möglich. Grossbritannien und einige Staaten Europas erbrachten diese Opfer «in Freiheit» – in jahrzehntelanger Ausbeutung einer rechtlich freien, ökonomisch geknechteten Arbeiterschaft und von mehr oder minder rechtlosen Kolonien. Dagegen steht die russisch-kommunistische Möglichkeit: Noch grössere Opfer werden in der zentral geleiteten Wirtschaft und im autoritären Zwangsstaat von der «Gemeinschaft» auferlegt und von ihr getragen – das Opfer wird in Gestalt eines Konsumverzichtes der Bevölkerung abgezwungen. Vielleicht ist dort die Freiheit und hier die Gleichheit grösser – aber zeitweise dürfte hier wie dort das Opfer als unerträglich schwer erscheinen. Wie aber kann es überhaupt einen dritten Weg geben? Wie haben die Vereinigten Staaten ohne industrielle und ohne kommunistische Revolution den Industrialismus, den Hochkapitalismus, zum Sieg führen können?

Erstens ist der Unabhängigkeitskrieg, der durchaus als Revolution verstanden werden kann, als Vorläufer und Seitenstück der Französischen Revolution, genau so wie diese politisch gewesen, und daher blieben alle irgendwie revolutionären Gedanken und Strömungen in den U.S.A. bis zum heutigen Tag politisch, meist sogar aussenpolitisch und antibritisch. Zweitens hat es in den amerikanischen Südstaaten zwar Ansätze des Feudalismus gegeben; aber da diese britischen Dependancen führend im Kampf gegen England gewesen sind, hat sich kein Standesressentiment gegen sie geregt, und da das Land, der Kontinent, unübersehbar gross war und wirklich unbegrenzte Möglichkeiten bot, liess sich die neue, grosse Industrie

auf bisher unerschlossenem, freiem Gebiet errichten. Drittens war das Gewerbe durch die englische Krone auf niedrigem, dörflichem Stand gehalten. Die Aufgabe bestand also nicht in der revolutionären Umwandlung des Früh- zum Hochkapitalismus, sondern im unmittelbaren Neuaufbau der hochkapitalistischen Industrie. Mit anderen Worten: Die Vereinigten Staaten haben die Frühstufe des Kapitalismus übersprungen. Daher hat, was in Europe die alte Gesellschaft revolutionierte, in den Vereinigten Staaten zur unmittelbaren Begründung einer neuen industriellen Gesellschaft gedient, einer Gesellschaft mit begreiflicherweise unangefochtenem Fortschrittsglauben, einer Gesellschaft fast ohne Proletariat und ohne Sozialismus[10].

Indem wir diese letzte Tatsache feststellen, ergibt sich, dass die Schaffung eines Proletariats nicht – wie wir europäischen Entwicklungsfanatiker, auch die Nicht-Marxisten, gewöhnlich annehmen – eine unvermeidliche Folge und Begleiterscheinung des Hochkapitalismus, sondern nur der «Industriellen Revolution» im früher besprochenen Sinne ist. Das heisst aber: Es ist offenbar ein «Industrialismus» ohne Proletariat nicht nur möglich auf dem russisch-kommunistischen, sondern auch auf dem amerikanisch-kapitalistischen Weg. Und also wäre die tatsächliche Entwicklung eines Proletariats nicht eine allgemeine Zwangsläufigkeit, sondern ein geschichtlicher, ein europäischer Sachverhalt, der besonderer Erklärung bedarf.

Über die europäische Entwicklung haben ENGELS, MARX, SOMBART das Wesentliche gesagt, als sie die Proletarisierung in Zusammenhang mit dem Übergang vom Früh- zum Hochkapitalismus brachten, die Entvölkerung des Landes und die Verstädterung schilderten und die Verwandlung der kleinen Werkstube des patriarchalischen Meisters in die grosse Fabrik des industriellen Kapitalisten darstellten. Dadurch bildet sich wirklich die Klasse der modernen Arbeiter, von denen mit Recht gesagt wurde, dass sie nichts mehr besitzen und nichts anderes mehr auf dem Markt anzubieten haben als sich selbst, ihre Arbeitskraft. Es scheint mir wichtig, dies noch zu ergänzen durch die standortstheoretische Überlegung: Der ganze Vorgang vollzieht sich im Zeitalter der Kohle. Die Kohle aber hat

10. Mit gutem Grund hat daher schon SOMBART die Frage behandelt: *Warum gibt es in den Vereinigten Staaten keinen Sozialismus?* (Tübingen 1906).

zunächst als reines Gewichtsverlustmaterial die Kraft, auch den Verhüttungsprozess in die Nähe ihrer Lager zu ziehen, und da sie auch in der Verarbeitung als Heiz- und als Leuchtstoff Verwendung findet, verstärkt sie auch für die Industrien der Weiterverarbeitung die Tendenz, sich um Zeche und Hochofen herum anzusiedeln. So ist es zu jenen gewaltigen Agglomerationen an der Ruhr, am Pas de Calais, in Belgien, in Lothringen, aber auch um Witkowitz usw. gekommen – Industrieagglomerationen, in denen zugleich sich das Proletariat, entwurzelt, hoffnungslos und meist nur durch das gemeinsame Klassenbewusstsein verbunden, zu Tausenden und Hunderttausenden zusammenballte. Ein ähnlicher Vorgang vollzog sich in den Grosstädten, welche eine starke Agglomerationskraft auf die konsumorientierten Industrien ausübten und in deren Slums sich das grosstädtische Proletariat zusammendrängte.

Hier besteht also eine theoretisch zwingende Verknüpfung. Die Kohle als Gewichtsverlustmaterial führt zur Agglomeration der Industrie in den Kohlenbecken, und diese Agglomeration erfordert den Nachzug von riesigen Arbeitermassen. Wenn wir aber zu Recht festgestellt haben, dass in den Vereinigten Staaten kein nennenswertes Proletariat und kein Sozialismus existiert, so muss das bedeuten: Die Massierung von Arbeitern allein schafft noch keine Arbeiter*klasse*, kein Klassenbewusstsein und kein Proletariat.

Dies ist tatsächlich die Lehre, die aus der amerikanischen Entwicklung zu ziehen ist. Es hat zwar noch in den siebziger und achtziger Jahren des vergangenen Jahrhunderts in den Vereinigten Staaten den europäischen verwandte Erscheinungen gegeben – Reste von schamloser Ausbeutung der Arbeitskraft, Trucksystem usw. –, aber nichts davon hat zu einem ähnlichen Klassenbewusstsein geführt, und selbst Verbände gleichen Namens wie die Gewerkschaften haben heute in den USA einen anderen Geist und einen anderen Stil als alle europäischen Entsprechungen. Drei Gründe scheinen mir massgeblich für diese Verschiedenheit:

Erstens fehlt drüben die europäische Hoffnungslosigkeit, welche den Arbeiter, seine Familie und alle künftigen Generationen, falls er sich nicht kollektiv zur Wehr setzt, an das ewig gleiche Notschicksal gebunden glaubt. Auch der Arbeiter hat drüben das Bewusstsein, dass er es durch Leistung und Glück zu etwas Besserem bringen kann. Dass man vom Zeitungsjungen sich zum Millionär

emporarbeiten kann, ist keine Mythe, sondern hat sich oftmals ereignet und beflügelt die Hoffnungen und den Leistungswillen jeder jungen Generation.

Zweitens sind die amerikanischen Kapitalisten, so viele Freibeuter und Gangster es auch unter ihnen gegeben hat, im grossen und ganzen sehr viel klüger als ihre europäischen Kollegen gewesen – sie haben von je zu je den Aufstieg erleichtert. Vielleicht auch ist dies keine Frage der Klugheit, sondern ist soziologisch zu interpretieren: In Europa fand die Bourgeoisie eine alte Herrschaftsschicht vor, der sie sich anpasste und deren ständische Abkapselung sie als neue Klasse übernahm. In den Vereinigten Staaten fehlten diese alten Schichten fast ganz, und die industrielle Bourgeoisie, die gleichzeitig den Aufbau von Staat und Gesellschaft und Wirtschaft zu vollziehen hatte, war in ihrem dynamischen Optimismus sich klar bewusst, dass sie des immer neuen Zuzugs von Menschen mit Initiative, Mut zur verantwortlichen Entscheidung und Tatkraft bedurfte[11]. Das demokratisierte Erziehungswesen gab willentlich allen Schichten die Möglichkeit, die Kinder besser zu bilden und sie für ansehnlichere Positionen als die der Väter zu schulen.

Drittens hatte der unermessliche Raum nicht nur die Bedeutung, dass Arbeiter und Arbeiterkinder *job* und Wohnsitz beliebig wechseln konnten, sondern er bot auch nach der Erfindung des Automobils die Möglichkeit der Auflockerung der Städte und das heisst der Verbürgerlichung der Massen. Die Vereinigten Staaten sind

11. Für den anglo-amerikanischen Leser dürften sich besondere Literaturangaben erübrigen. Für den kontinentalen, dessen Bild der amerikanischen Entwicklung noch stark durch das Gesicht der USA in der Periode der Jahrhundertwende bestimmt wird, sei unterstrichen, dass noch immer ALEXIS DE TOCQUEVILLE's *De la démocratie en Amérique* mehr über die bleibenden Grundzüge Amerikas und der Amerikaner enthält als die Mehrzahl der heutigen Sensationsbücher. Eine gute völkerpsychologische Studie bietet neuerdings das englisch und deutsch erschienene Werk von GEOFFREY GORER über die Amerikaner, wenn auch der einseitig englische und psychoanalytische Blickpunkt zu manchen Verzerrungen führt; zur Einführung sei auch auf meine kleine Schrift *Amerikanische Impressionen*, 2. Aufl. (Tübingen 1953), verwiesen. – Wichtig ist die «Entrepreneurial History», die Geschichte von Unternehmern und Unternehmungen, welche als besonderer Zweig der Wirtschaftsgeschichte in den USA, vor allem dank A. H. COLE und FRITZ REDLICH, entwickelt wird. Im übrigen sei für die im Text gestreiften Probleme noch hingewiesen u. a. auf die Werke von E. BAUMGARTEN, J. DORFMAN und A. M. SCHLESINGER.

daher nicht, wie der Europäer noch meist glaubt, das Land der Wolkenkratzer – die es gibt, aber meist als Bürogebäude –, sondern das Land unendlich vieler kleiner, mittlerer und grosser Privathäuser, welche die Arbeiter und Angestellten genau so wie die Direktoren bewohnen, von wo sie morgens im eigenen Wagen zur Arbeit aufbrechen und wohin sie nach der Arbeit zurückkehren, um den Garten zu pflegen oder handwerkliche Arbeit im Haus zu verrichten oder gar einen Auf- oder Anbau selbst durchzuführen.

V

Nun ist beim Übergang von der Kohle- zur Atomzeit dies das Entscheidende – und darum spreche ich von einer *neuen* Phase der industriellen Revolution –, dass die Agglomerationstendenzen an Kraft verlieren, dass eine Deglomeration durchführbar und dass statt der unausweichlichen Proletarisierung zumindest eine Möglichkeit der Entproletarisierung gegeben ist. Ich muss mich wieder auf die Heraushebung der wesentlichsten Komponenten beschränken:

1. In Wirklichkeit hat nicht erst die Atom-, sondern schon die elektrische Energie das Monopol der Kohle gebrochen und die Attraktionskraft der Kohlenlager geschwächt. Diese Chance wurde in Europa verhältnismässig wenig wahrgenommen, weil die einmal bestehenden Massierungen eine starke Beharrungskraft besassen und weil die Kohlen- und Stahlbarone keinen Anlass hatten, eine Entwicklung zu fördern, die à la longue ihre Monopolposition bedrohte. Immerhin hat der Elektromotor das Kleingewerbe gerettet und hat die aus den Wasserkräften unserer grossen Flüsse und Seen gewonnene Energie die weitere Industrialisierung ermöglicht, ohne die Kohlenreserven allzu sehr zu beanspruchen. Wirklich genutzt wurde die neue Chance sowohl in USA wie in Sowjetrussland.

2. Ebenso wie die Elektrizität, so haben auch Erdöl und Erdgas bereits neue Aspekte eröffnet und eine verhältnismässige Streulage der Industrie ermöglicht. Mit ihrer Hilfe ist in den USA die Industrialisierung einiger «zurückgebliebener» Südstaaten durchgeführt, ist vor allem in Texas die Petrochemie entwickelt worden. In Westeuropa sind wir auch hierin weit zurück. Ich kann mich des Eindrucks nicht erwehren, dass daran in erheblichem Mass ein gewisses Erlahmen der kapitalistischen Dynamik zwischen den beiden Welt-

kriegen schuld gewesen ist. Vielleicht sass auch die Überzeugung des 19. Jahrhunderts allzu fest, dass die Länder der gemässigten Zone für die Industrialisierung vorbestimmt seien und dass man im Interesse der internationalen Arbeitsteilung das Erdöl aus Kolonien, Balkanstaaten usw. beziehen müsse. Und gewiss war sowohl das Monopol der Kohle wie auch das Denken in Vorstellungen der Kohlezeit noch so stark, dass man lieber nach Verfahren zur Verflüssigung der Kohle suchte, als in eigenem Boden kostspielige Bohrungen nach Erdöl vorzunehmen. Dass hier in Österreich durch die Aufteilung der alten Monarchie die Vorkommen von Steinkohle und Erdöl in andere Nachfolgestaaten gelangten – dieser Tatsache ist es wohl zu danken, dass hier die Erdölforschung und -gewinnung systematischer und erfolgreicher betrieben wurde als in den alten Industrieländern Europas (Zitzersdorf 1932!).

3. Der ständig wachsende Energiebedarf der alten und der neuen Industrieländer hat nun eine Grössenordnung erreicht, bei der die alten Energiequellen zu seiner Deckung nicht mehr oder nicht mehr lange genügen. In einigen Ländern, so in der Schweiz, ist es nur noch eine Frage weniger Jahre, dass alle nutzbaren Wasserkräfte der Energiegewinnung dienstbar gemacht sind. In anderen, so vor allem in England, ist der Zeitpunkt einer Erschöpfung der Kohlenvorräte abzusehen. Aber auch für die westdeutsche Bundesrepublik gilt bekanntlich, dass ihre Kohlenproduktion heute bei weitem nicht zur Deckung des heimischen Bedarfes ausreicht, sondern dass die Einfuhr enormer Mengen amerikanischer Kohle, zumindest im jetzigen Stadium der Vollbeschäftigung, erforderlich ist. Daraus folgt: Während aus Kriegs- und Kostengründen die Atomforschung in den Vereinigten Staaten am weitesten entwickelt ist, sind es gerade die Länder der alten «Industriellen Revolution», welche auf die baldige Verwendung von Energie angewiesen sind, die auf neue Weise, durch Kernspaltung und vielleicht demnächst durch Kernfusion, gewonnen wird.

4. Während die elektrische Energie bisher den grossen Nachteil hatte, dass beim Stromtransport beträchtliche Verluste entstehen, dass aber der Transport unvermeidlich war, weil Wasser- wie thermische Werke standortsmässig fixiert sind, besteht für Atomkraftwerke eine prinzipielle Freiheit der Standortswahl. Während zur Erzeugung von 100 Millionen kWh elektrischer Energie in einem

modernsten thermischen Kraftwerk 35000 Tonnen Kohle gebraucht werden, das sind 3500 Güterwagen zu 10 Tonnen, braucht es für das gleiche Quantum im einfachsten Atomreaktor ganze 35 kg Uran. Das bedeutet, dass der Kostenfaktor Transport für den Rohstoff ganz dahinfällt und dass er auch für den Strom auf ein Minimum zusammenschrumpft, wenn das Atomkraftwerk unmittelbar am Konsumort oder in seiner nächsten Nähe errichtet wird. Dabei ist wichtig, dass nach den neuesten amerikanischen Angaben schon Reaktoren mit einer Produktion von 10000 kWh als rentabel angesehen werden können.

Vor geschulten Ökonomen ist es nicht notwendig, im einzelnen auseinanderzusetzen, welch neue Horizonte sich hierdurch für die Industrie eröffnen. Sogenannte Notstandsgebiete alter Industrieländer können nun industrialisiert werden – mancher Erz- oder Bauxittransport wird sich erübrigen, wenn an Ort und Stelle die Verhüttung oder die Aluminiumgewinnung möglich ist –, und für die Industrialisierung der unentwickelten Länder eröffnen sich ganz neue Perspektiven, wenn das Stadium der alten Energiegewinnung übersprungen werden kann, der Bau von kostspieligen Strassen und Leitungen sich erübrigt und daher mit geringerem Kapitaleinsatz das erstrebte Ziel in Reichweite rückt.

VI

Indessen, dies alles bedeutet wohl eine technische, doch noch keine industrielle Revolution in unserem Sinn. Hierfür ist entscheidend die mitverbundene soziologische Komponente, die ich vorsichtig als *Möglichkeit der Entproletarisierung* umschrieb. Ich spreche von «Möglichkeit»; denn auch wenn der Zwang zur Agglomeration, zur Massierung von Industrien und Menschen, nachlässt und schliesslich aufhört, so bedeutet das in den alten Industrieländern noch lange nicht, dass ohne staatlichen Antrieb und vielleicht sogar staatliche Leitung eine Gegenbewegung einsetzt. Vielleicht werden es am ehesten die Lohndifferenzen zwischen den Städten und dem flachen Lande sein, welche den deglomerativen Tendenzen zum Sieg verhelfen. Aber der entscheidende Faktor ist vermutlich darin zu erblicken, dass die Atomenergie zum Vorantreiben der Automation nötigt und dass die Automation, die Steuerung und Kontrolle des

Maschinenprozesses, niemals von dem ungelernten, proletarischen Arbeiter alten Stils bedient werden kann, sondern einen neuen, geschulten, technisch gebildeten Arbeitertyp verlangt.

Solche Chancen – das lehrt jeder Blick auf die Geschichte – können genutzt und können vertan werden. Kein Zweifel kann bestehen, dass die Amerikaner sie genau so nutzen werden wie die Russen, die als erste ein Ministerium für Automation errichtet haben. In Westeuropa ist jede Lösung um ebenso viel schwieriger, als sie dringlicher ist. Sie ist in Russland leichter, weil im Rahmen der Planwirtschaft die Automation ohne allzu grosse Reibungswiderstände so durchgeführt werden kann, dass an einem Ort durch die Automation frei werdende Arbeitskräfte an anderer Stelle zum Einsatz gelangen. Und sie ist in den Vereinigten Staaten leichter, weil – zumindest solange der Pioniergeist und der Wandertrieb und das Bevölkerungswachstum anhält – eine technische Arbeitslosigkeit kaum von Dauer sein dürfte; wiewohl zu beachten ist, dass zum ersten Mal in der amerikanischen Wirtschaftsgeschichte die Automation eine Gegenwehr von Gewerkschaften gegen den technischen Fortschritt hervorgerufen hat. Hier in Resteuropa aber besteht die dreifache Gefahr: dass die Unternehmer die neuen Verfahren mit ebenso wenig psychologischem und soziologischem Verständnis ein- und durchführen wie die erste Phase der industriellen Revolution; dass die Gewerkschaften in alten Geleisen weiterwursteln und sich gegen die neuen Maschinen als Ursache von Arbeitslosigkeit wenden, statt das ihre zur planmässigen Überwindung beizutragen; und dass die Wirtschaftspolitiker, gebannt durch die unstreitigen jüngsten Erfolge der freien Marktwirtschaft, nicht rechtzeitig erkennen, wie notwendig auf diesem Gebiet eine staatliche Überwachung und Koordination und vielleicht sogar vorausschauende Planung wird. Die Gefahr verstärkend macht sich in Europa begreiflicherweise nach den bitteren Erfahrungen der letzten 40 Jahre überall, auch in der Jugend, ein starkes Verlangen nach Sicherheit geltend – eine Müdigkeit, die lieber die Augen vor neuen Möglichkeiten und Abgründen verschliesst, statt den Versuch zu ihrer Meisterung zu wagen.

In solcher Schicksalsstunde ist die Aufgabe und ist die Verantwortung der Ökonomen und der Soziologen riesengross. Wir dürfen nicht, wie es die Generation unserer Lehrer, mit Ausnahme von

MAX und ALFRED WEBER und wenigen anderen, getan hat, uns abseits des wirtschaftlichen und politischen Geschehens halten; wir dürfen nicht so tun, als ob die Fragen von Atomenergie und Automation und elektronischen Maschinen (die in den gleichen Zusammenhang gehören) nur die Kernphysiker, die Techniker, die Chemiker etwas angingen; wir dürfen uns nicht einbilden, dass wir mit Modellen von gestern unverändert den Problemen von morgen gerecht werden. Was not tut, ist: eigene Erkenntnis zu gewinnen über die Chancen von Wirtschaft und Gesellschaft in dieser Zeit und ernsthaft darüber nachzusinnen, mit welchen Mitteln sie am fruchtbarsten im nationalen, im europäischen und im Weltrahmen wahrgenommen werden können. Die erste Phase der industriellen Revolution hat in Europa zu einer Destruktion von Staat und Gesellschaft geführt, nicht zuletzt darum, weil die bürgerliche Ökonomie die Wahrheit aufzudecken den Sozialisten überliess und die politische Ökonomie entpolitisierte. Wir sind gewarnt: Wenn die zweite Phase Europa nicht vollends in ein Chaos stürzen, sondern umgekehrt den Neuaufbau von Wirtschaft und Gesellschaft und Staat erleichtern und fördern soll, dann bedarf es des Einsatzes aller Kräfte, bedarf es nicht nur einer Theorie des wirtschaftlichen und des gesellschaftlichen Wachstums, sondern der wachsamen Überschau über die technische Entwicklung und bedarf es vor allem auch des persönlichen Muts, die Dinge beim Namen zu nennen und selbst zur Überwindung der vielen – ökonomisch und sozial und nicht zuletzt geistig – kritischen Punkte theoretisch und praktisch mitzuraten und mitzuwirken.

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ZUSAMMENFASSUNG

Hat der Begriff «Industrielle Revolution» einen eindeutigen Sinn oder handeln jene Wirtschaftshistoriker richtig, die ihn als wissenschaftlich unexakt vermeiden? Der Verfasser vertritt die Auffassung, dass unter industrieller Revolution jene vom Bürgertum durchgeführte Revolution zu verstehen ist, welche den Feudalismus entthronte, die neuen technischen Mittel von Produktion und Transport in welt-

weitem Umfang zur Anwendung brachte und die gesamten gesellschaftlichen Verhältnisse umwälzte und neugestaltete. Dieser Begriff stellt nur für England einen «Realtyp» dar, das heisst, nur dort hat eine industrielle Revolution in diesem klar umschriebenen Sinn stattgefunden. Überall sonst ist der Begriff nur als «Idealtyp» verwendbar und sind daher die Abweichungen das geschichtlich Interessante; vor allem ergibt sich dann, dass nicht nur Russland, sondern auch die Vereinigten Staaten keine industrielle Revolution diesen Sinnes durchgemacht haben.

Von heute aus betrachtet der Verfasser diese industrielle Revolution als eine erste Etappe, die Etappe der Kohle- und Eisenzeit und der Schaffung des Proletariats. Den Beginn der zweiten Etappe erblickt er im Übergang in das Zeitalter der Atomenergie und der Automation, mit der hierdurch gegebenen Möglichkeit der Entproletarisierung. Das abermalige Zusammentreffen der technischen und der soziologischen Komponente und die Übersehbarkeit ihrer Formen und Folgen stellt Ökonomen und Soziologen vor die Verpflichtung, theoretisch und praktisch mitzuwirken, damit die zweite Etappe nicht wieder zur Destruktion von Staat und Gesellschaft, sondern zu einem neuen Aufbau führt.

SUMMARY

Industrial Revolution. Has the concept "industrial revolution" a single, unambiguous meaning, or are those economic historians right who avoid the expression, as lacking scientific exactitude. The writer takes the view that what should be understood by "industrial revolution" is the revolution which was carried out by the bourgeoisie, dethroned feudalism, brought the new technical means of production and transport into use on a worldwide scale, overthrew the whole existing system of social relations and gave them a new structure. Only in the case of England does this concept represent a type having reality ("real type"), *i.e.*, it was only there that an industrial revolution in this clearly defined sense took place. For every other country the concept is applicable only as an "ideal type"; consequently, it is the deviations that are historically the point of interest—particularly the fact that, in this sense, not only in Russia but also in the United States there has been no industrial revolution.

From the standpoint of the present day, the writer regards this industrial revolution as a first stage: the stage of the coal and iron age and of the creation of the proletariat. He sees the beginning of the second stage in the transition to the age of atomic energy and automation with the concomitant possibility of a "deproletarisation". The conjunction—for the second time—of the technical and sociological components of revolution, and the fact that the forms and consequences of this second stage can be discerned and surveyed, confront economists and sociologists with the obligation of theoretical and practical cooperation, in order that the second stage may not lead back to the destruction of state and society but forwards to a new constructive achievement.

RÉSUMÉ

Révolution industrielle. Le concept «révolution industrielle» est-il sans ambiguïté et les historiens de l'économie qui évitent cette expression comme étant scientifiquement inexacte ont-ils raison? L'auteur est d'avis qu'il faut comprendre par «révolution industrielle» celle accomplie par la bourgeoisie, qui détrôna la féodalité, qui mit en œuvre les nouveaux moyens techniques de production et de transport à l'échelle mondiale et bouleversa l'ensemble des relations sociales et leur donna une nouvelle configuration. Ce concept n'a de réalité concrète *(Realtyp)* que pour l'Angleterre; en d'autres termes, seul ce pays a connu une révolution industrielle dans ce sens clairement défini. Partout ailleurs, ce concept n'est applicable que comme *Idealtyp* et par conséquent les déviations sont, du point de vue historique, le côté intéressant; avant tout, il en résulte que dans ce sens ni la Russie, ni les Etats-Unis n'ont subi une révolution industrielle.

Du point de vue actuel, l'auteur considère cette révolution industrielle comme une première étape: l'étape de l'âge du charbon et du fer et de la création du prolétariat. Il considère comme le début de la deuxième étape le passage à l'âge de l'énergie atomique et de l'automation avec la possibilité, offerte par là même, de disparition du prolétariat. La concordance, pour la seconde fois, des facteurs techniques et sociologiques et le fait que les formes et les conséquences de cette seconde étape peuvent être discernées placent les économistes et les sociologues devant l'obligation de coopérer théoriquement et pratiquement afin que la seconde étape ne conduise pas de nouveau à la destruction de l'Etat et de la Société mais à leur édification nouvelle.

MAN'S ROLE IN CHANGING THE FACE OF THE EARTH IN CLASSICAL ANTIQUITY

I. THE THEMA

This survey[1] is concerned with Greco-Roman civilization from about 1100 B.C. to 565 A.D. as far as it influenced the overall geophysical structure of the Mediterranean lands and their neighbouring regions. We exclude from our inquiry the Minoan, Mycenean, Helladic, and the Italian prehistoric third and second millenia B.C. Italy was an essential part of prehistoric Western Europe during this time, and Greece[2] was not essentially different in social and economic conditions from the contemporary Ancient Oriental Bronze Age civilizations as far as we are able at present to ascertain such matters.

Similarly the Byzantine development from the death of Justinian I. in 565 A.D. to the Turkish conquest of Constantinople in 1453 A.D. has, on the whole, closer affinities with the contemporary Medieval

1. This is the "background-paper" no. 14 written for an International Symposium in Princeton (U.S.A.), on "Man's role in changing the face of the earth". The convention in question had been called together and organized by the Wenner-Gren Foundation of New York in June 1955. After the meeting the manuscript of this article has been revised throughout by the author and supplemented by the necessary notes. The text was reformulated by me, in a number of passages, on the suggestion of Mrs. Jean S. Stewart, staff member of the Wenner-Gren Foundation. For some corrections of fact this author has to thank Professor H. C. Darby, University of London.

2. Cp. H. BENGTSON, "Griechische Geschichte von den Anfängen bis in die römische Kaiserzeit", *Handbuch der Altertumswissenschaft*, III, 4 (1950), part 1; J. B. BURY-R. MEIGGS, *A History of Greece to the Death of Alexander the Great*, 3rd ed. (1951), chap. I, 1–6. For the first tentative editions of Greek texts written in a Minoan script cp. M. VENTRIS-J. CHADWICK, "Evidence for the Greek Dialect in the Mycenaean Archives", *Journ. Hell. Stud.*, 73 (1953), 84f.; *id.-id.*, "Greek Record in the Minoan Script", *Antiquity*, 27 (1953), 196f.; A. FURUMARK, "Ägäische Texte in griechischer Sprache", *Eranos*, 51 (1953), 103f., 52 (1954), 18f.; G. BIOERCK, "Pour les inscriptions en alphabet linéaire B peintes sur les vases", *Eranos*, 52 (1954), 120f.; M. LEJEUNE, "Essais de philologie mycénienne", *Revue de Philologie*, 29 (1955), 147f.; L. J. D. RICHARDSON, "Further Observations on Homer and the Mycenaean Fablets", *Hermathena*, 86 (1955), 50f.; H. MÜHLESTEIN, "Zur mykenischen Schrift", *Museum Helveticum*, 12 (1955), 119f.

Western, Medieval Islamic, and Medieval Russian structural alterations in social and economic patterns and technical know-how[3] than with the ages of Pericles, Cicero, and Tribonianus. Two rather unique and violent population and language changes appear near the beginning and the end of Classical Antiquity as we define it. About 1100 B.C. the incipient Iron Age[4] led over to Indo-European, Semitic, and other migrations and language changes of great intensity from Britain to India, probably surpassing, in historic importance and revolutionary impact, the much discussed and powerful Germanic, Slav, Arabic, and related migrations and the contemporary language changes from Latin to the Romance languages, from almost identical Germanic and Slav dialects to several distinct written languages in both these national groups, from Hellenistic to Middle Greek, and the related and similar language changes in the Orient[5] before and after 565 A.D.

In addition, a terrible plague, from 541 A.D. or so, depopulated the world from Wales to Central Asia, eliminating for good the genes of between one third and one half of the population groups and races connected with Classical Antiquity proper[6]. Under these circumstances, it is not surprising that Classical Latin and Greek were dead literary languages after 565 A.D., the Corpus Iuris, the historical works of Prokopius, and a number of beautiful epigrams of the age of Justinian I. and Theodora being the last timeless creations of the unadulterated Hellenic and Roman linguistic genius. New worlds of the spirit were to arise painfully in the Romance, Germanic, Celtic, and Western Slav literatures of the Medieval West, and the Middle Greek Byzantine, Russian and Southslavian, Georgian, Armenian, Syriac, Coptic, Middle and New Persian, Abyssinian, and especially the Arabic literary development in the Medieval East.

3. Cp. G. OSTROGORSKY, "Geschichte des byzantinischen Staates", *Handbuch der Altertumswissenschaften*, XII, 1/2, 2nd ed. (1950), *passim*.

4. Cp. BENGTSON, *op. cit.*, 46 f.; F. M. HEICHELHEIM, *Wirtschaftsgeschichte des Altertums*, I (1939), 199 f.

5. For the last efflorescence of living Latin and Greek literature and the contemporary Armenian development cp. E. STEIN, *Histoire du Bas-Empire*, II (1949), chap. 7, 12, and Index *s.v.* "Arménie". For the Coptic and Semitic literatures cp. B. SPULER, *Handbuch der Orientalistik*, I, 2 (1952), 207 f. (Morenz); III (1954), 135 f. (Brockelmann), 168 f. (Baumstark-Rücker), 207 f. (Brockelmann).

6. STEIN, *Histoire du Bas-Empire*, II, 758 f., 841.

II. FROM ca. 1100 TO ca. 560 B.C.

The world of the early Iron Age, after the Dorian, Italic, and the many other migrations of this period had come to an end, looked essentially different from that of the Ancient Oriental Bronze Age. The new Iron Age villages, from India to Spain and Britain, maintained political autonomy, or even full independence, and a higher standard[7] of technical civilization for the lower classes, *i.e.*, for at least 90% of the world's population, than the Ancient Oriental Bronze Age cities had been able to offer. The invention of the iron plough-share alone, not to speak of numerous other improved or novel agricultural iron tools, brought about an agricultural revolution; for the wooden prehistoric and Ancient Oriental plough-shares could rarely be worked in other than so-called light soils.

When now the wide spaces of the heavy soils, the most fertile soils of our globe, were taken under the plough for the first time in human history, enormous population increases outside of Egypt, Mesopotamia, India, China, and other territories of "hydraulic" civilizations[8] were the consequence. Similarly, owing to new Iron Age techniques, mining production throughout the world was intensified considerably. Greece, about 800 B.C. or so, gradually began to lead in improving the potentialities of the new Iron Age civilizations[9]. First a new pattern of city settlement developed, the Greek *polis*, originally mainly an agrarian settlement and political unit for small rulers and aristocrats, their dependents and retainers, some craftsmen, merchants, priests, and a large number of neighbouring small independent farmers[10].

7. PAULY-WISSOWA, *Realenzyklopädie der klassischen Altertumswissenschaft*, art. "Pflug" (Drachmann); HEICHELHEIM, *op. cit.*, 1/2, Index *s.v.* "Pflug" (plough); M. ROSTOVTZEFF, *The Social and Economic History of the Hellenistic World*, (1941), Index *s.v.* "Plough". For the probably earliest extant drawing of a wooden plough, a pictographic drawing from the Uruk of the late fourth millenium B.C., cp. J. B. PRITCHARD, *The Ancient Near East in Pictures Relating to the Old Testament*, (1954), no. 87.

8. Cp. here K. A. WITFOGEL, "Die Theorie der orientalischen Gesellschaft", *Archiv für Sozialforschung*, 9 (1940), 92f.; *id.*, "Hydraulic Civilizations", Wenner-Gren Symposium, Background Paper, no. 11 (1955).

9. Cp. BENGTSON, *op. cit.*, part II; BURY-MEIGGS, *op. cit.*, chap. II.

10. Cp. BENGTSON, *op. cit.*, Index *s. v.* "Polis"; V. EHRENBERG, "When did the Polis rise?", *Journ. Hell. Stud.*, 57 (1937), 147f.

From the 8th century B.C. onwards the Greek colonization movement planted such Hellenic *poleis* in large numbers from Naucratis in Egypt and the Cyrenaica to the Crimea and the Taman peninsula of South Russia, and from Cyprus, Poseidion-Al Mina, and, perhaps, the Karatepe of the "Danuna" on the Syrian coast to the shores of the Iberian peninsula[11]. Everywhere, with the help of the new iron plough-shares and the other new agricultural tools, the heavy soils were opened up to the growing of cereals[12]. The Hellenic vineyard and olive plantations[13] on hilly terraces and other suitable soils, and viticulture on full grown trees were introduced. Some forests may have been transformed already now into more open park landscapes for aesthetic reasons[14]. Fishing and piracy were considerably intensified[15].

The agricultural plants and animals of the Hellenes of these centuries[16], especially vines, olives, certain grain species, certain breeds

11. Cp. BENGTSON, *op.cit.*, part II; BURY-MEIGGS, *op.cit.*, chap. II and p. 855; G. GLOTZ, *Histoire Grecque*, I (1925), chap. V; Sir CH. L. WOOLLEY, *A Forgotten Kingdom*, (1953).

12. PAULY-WISSOWA, *Realenzyklopädie der klassischen Altertumswissenschaft*, spl. VI, art. "Sitos" (Heichelheim); A. JARDÉ, *Les céréales dans l'antiquité grecque*, I (1925); L. A. MORITZ, "Husked and Naked Grains, Corn", *Class. Quart.*, 49 (1955), 129f., 135f.

13. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Ackerbau" (Olck), "Calcatorium" (Olck), "Landwirtschaft" (Orth), "Ölbaum" (Schulten), "Oleum" (Pease), "Torcular" (Hörle), "Trapetum" (Hörle), "Tudicula" (Hörle); *Oxford Class. Dict.*, art. "Agriculture" (Heichelheim), "Olive culture" (Heichelheim), "Viticulture" (Heichelheim).

14. Cp. for the problems of deforestation in classical antiquity, H. C. DARBY, "The Clearing of Woodland in Europe", Wenner-Gren Symposium, Background Paper, no. 17 (1955); T. FRANK, *An Economic Survey of Ancient Rome*, Index vol. (1940), *s.v.* "Deforestation", "Forests"; V. EHRENBERG, *The People of Aristophanes*, 2nd ed. (1951), 75; C. J. GLACKEN, "Changing Ideas of the Habitable World", Wenner-Gren Symposium, Background Paper, no. 4 (1955); F. M. HEICHELHEIM, *Kyklos*, 8 (1955), 92f.; ROSTOVTZEFF, *op.cit.*, III, 1612 f.; J. A. RICHMOND, *Roman Britain*, (1955), 131, 133f.

15. PAULY-WISSOWA, *Realenzyklopädie etc.*, spl. IV, art. "Fischereigewerbe" (Stöckle); F. M. HEICHELHEIM, "Die Ausbreitung der Münzgeldwirtschaft und der Wirtschaftsstil im archaischen Griechenland", *Schmollers Jahrbuch*, 55 (1931), 229f.; H. A. ORMEROD, *Piracy in the Ancient World*, (1924), chap. I–III; E. ZIEBARTH, *Beiträge zur Geschichte des Seeraubs und Seehandels*, (1929).

16. Cp. notes 12, 13, and HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. V, note 55 (German and English editions).

of dogs, horses, donkeys, horned cattle, goats, sheep, and bees spread to all Greek colonial territories and those of neighbouring natives, as far as the climate from Spain to Syria and from North Africa to Russia permitted. In exchange, new domestic breeds were brought to Greece from abroad. The domestic fowl, in its advance from India and the Middle East, reached the Greek settlements during the eighth century B.C.[17]

The Etruscans, a proto-Indo-European nation, whose upper class hailed from Northwest Asia Minor and originally from the Caucasus, founded semi-agricultural towns (similar to those of the Greeks) in the Toscana and Latium[18], among them Rome (probably between 650 and 575 B.C.[19] Greek and Etruscan town building was soon imitated by the so-called *oppida* of the native Italic tribes[20].

From the last decades of the eighth century B.C. onwards, Phoenician and Greek inventors in shipbuilding intensified Mediterranean communications[21]. Phalanx infantry, a pattern of heavy infantry armament and close ranked battle formation which had originally been brought, as it appears now, by the Assyrians of our period to their Phrygian and Lydian allies, finally spread to the Greek motherland from Southwest Asia Minor. Phalanx tactics, adapted to Greek conditions, gradually made the free upper and lower middle class Hellenic infantrymen more important politically and strategically than the horsed aristocrats of the preceding centuries[22].

17. Cp. R. M. Cook, *Journ. Hell. Stud.*, 66 (1946), 89, note 181; Heichelheim, *Wirtschaftsgeschichte etc.*, chap. v, note 55 (English ed.).

18. For the Etruscan town settlements cp. M. Cary, *A History of Rome Down to the Reign of Constantine*, 2nd ed. (1954), chap. iii, § 2; M. Pallotino, *The Etruscans*, (1955).

19. Cp. E. Gjerstadt, "Stratigraphic Excavations in the Forum Romanum", *Antiquity*, 26 (1952), 60f.; *id.*, "Scavi stratigrafici nel Foro Romano e problemi ad essi relativi", *Bull. Commissione Arch. Communale di Roma*, 73 (1952), 13f.; *id.*, *Early Rome, I: Stratigraphic Researches in the Forum Romanum and along the Via Sacra*, (1953); F. Castagnoli, "Note di topografia romana", *Bull. Commissione Arch. Communale di Roma*, 74 (1954), 49f.

20. Cp. Pauly-Wissowa, *Realenzyklopädie etc.*, art. "Oppidum (1)" (Kornemann).

21. Cp. Bury-Meiggs, *op. cit.*, 109f.; Heichelheim, *Wirtschaftsgeschichte etc.*, chap. v, notes 11, 47, 52 (German and English editions); for the Phoenician ships of this period cp. also Pritchard, *op. cit.*, no. 106.

22. Cp. Bury-Meiggs, *op. cit.*, 129, 863; H. E. Stier, "Probleme der frühgriechischen Geschichte und Kultur", *Historia*, 1 (1950), 195f.

The Greek invention of the coin[23] near 650 B.C., first being struck in electrum, then in silver and gold, and the consequent rise of early Greek coin economy revolutionized capital investment in agriculture, mining, craftsman's workshops, trade, and banking operations. The output of Corinthian, Attic, and other pottery[24] for export throughout the Mediterranean area was stimulated and greatly increased, especially in low priced products. The issues of small silver denominations, which began in Aegina and Corinth slightly before and after 600 B.C., made possible small savings of the lower classes and especially intensive domestic trade with cheap goods which had been stifled so far by clumsy and wasteful barter operations. By these means[25] also, the hard working and thrifty mass of free Greek *polis* citizens gradually was made independent, in their economic aims, from their ruling aristocratic families. The Greek phalanx and the Greek coin economy became, in fact, the main forces which stimulated the nascent Greek democracy. Finally the creation of navies like that of the Periclean Empire of Athens gave even free Greek proletarian citizens full political influence in their cities[26].

III. FROM ca. 560 TO 333 B.C.

The earlier structural revolution of Hellenic town and agricultural societies was imitated intensively by non-Greeks from the time of king Croesus of Lydia[27]. The Greeks themselves advanced to a period of classical refinement in all spheres of human life, especially by introducing the principles of reason, rational ethics, logic, and the analysis of cause and effect into all suitable patterns of human activity. The capital which could be invested by society in changing the appearance and organization of cities and countryside, increased mainly because

23. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. v, note 8 (German and English editions); and especially E. S. G. ROBINSON, "The Coins from the Ephesian Artemision Reconsidered", *Journ. Hell. Stud.*, 71 (1951), 156f.; G. WELTER, "Äginetische Schildkröten", *Deutsches Arch. Jahrbuch*, 69 (1954), col. 28f. (Anzeiger); F. M. HEICHELHEIM, *Sylloge Nummorum Graecorum*, IV, 4 (1956).

24. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 51; CH. CLAIRMONT, "Greek Pottery from the Near East", *Berytus*, II (1955), 85f.

25. Cp. F. M. HEICHELHEIM, "Die Ausbreitung der Münzgeldwirtschaft und der Wirtschaftsstil im archaischen Griechenland", *Schmollers Jahrbuch*, 55 (1931), 229f.

26. Cp. BENGTSON, *op. cit.*, 152f.

27. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, spl. v, art. "Kroisos" (Weissbach).

world currencies were created, foremost among them that of the Attic silver tetradrachm which was accepted from Spain to India, and because the working urban populations increased from Babylonia to Sicily and Italy, but also due to professional bankers, nautical loans, and some giro transfers in account bookkeeping, mostly devices which diminished waste in capital transfer from Hellas to Babylonia[28].

The prices of agricultural products rose not only in Hellas between the sixth and the fourth centuries B.C., but also in Babylonia, an indication of increased demand from growing city populations in East and West[29]. Many Greek *poleis* of the period were characterized by scientific and rational town building and town planning[30], by well made harbour and dock buildings[31], aqueducts, roads, light-fires[32], large workshops of craftsmen with some division of labour *(ergasterion)*. We even find the Attic *deigma*[33], a clearing house and exchange for samples of import goods, or the Athenian *agora* of the fifth and fourth centuries B.C.[34], a permanent and large market with separate stands and subdivisions for the traders in accordance with their goods. *Agorai* of this kind were to be the models for the similarly organized bazaars of the Hellenistic-Roman era[35] and those of the

28. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, notes 2–4, 30.

29. Cp. F. M. HEICHELHEIM, "On Ancient Price Trends from the Early First Millenium B.C. to Heraclius I.", *Finanzarchiv*, 15 (1955), 502f.; W. H. DUBBERSTEIN, "Comparative Prices in Later Babylonia", *Am. Journ. Sem. Lang. and Lit.*, 56 (1939), 20f.

30. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Städtebau, B, C" (Fabricius, Lehmann-Hartleben); A. BOETHIUS, "Ancient Town Architecture and the New Material from Olynthus", *Am. Journ. Philol.*, 69 (1948), 396f.; K. A. DOXIADIS, *Raumordnung im griechischen Städtebau*, (1937).

31. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 31; K. F. LEHMANN-HARTLEBEN, "Die antiken Hafenanlagen des Mittelmeeres", *Klio Beih.*, 14 (1923), chap. I–IV.

32. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 31.

33. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Deigma" (with spl. VII); HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 26.

34. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 29; W. A. MCDONALD, "The Political Meeting Places of the Greeks", *John Hopkins Stud. in Arch.*, 34 (1943); R. MARTIN, "Recherches sur l'agora grecque", *Bibl. Ecol. Franc. d'Athènes et de Rome*, 174, 3 (1951).

35. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 19, 27–31; M. ROSTOVTZEFF, *The Social and Economic History of the Hellenistic World*, II (1941), 1271, 1274; *id.*, *Caravan Cities*, (1932).

Oriental Middle East to our own time. Even artificial harbour basins were excavated[36]. Sailing ships were as quick then as they were until 1500 A.D. or so[37].

As recent excavations in Austria have made certain, the Celtic inhabitants of the Alps invented the horseshoe[38] about 400 B.C., gradually to be accepted during the following centuries in Western Europe as an assistance to overland transport. Earlier, this revolutionary transport invention enabled Celtic cavalry on otherwise inferior horses to surprise and annihilate a Roman army on the Allia, to sack Rome in 387 B.C.[39], and to tire out and annihilate the excellently trained cavalry and phalanx of Macedonia in 278 B.C.[40] The carefully excavated silver mines of Laurion in Attica and the contemporary Attic inscriptions which are concerned with this mining district[41], are witnesses of Classical Hellenic man changing the face of a region completely, of numerous technical and economic improvements and well thought out legal provisions in this important field of primary production.

Agriculture[42] in Greek *polis* territory also was made more rational.

36. Cp. LEHMANN-HARTLEBEN, *op. cit.*, chap. III, V, VI.

37. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Schiffahrt" (Kroll), "Seewesen" (spl. V, Miltner).

38. Cp. for the problems of the horseshoe in antiquity HEICHELHEIM, *Wirtschaftsgeschichte etc.*, 364f., 1096, 1159; F. MORTON, "Hipposandalen aus Hallstadt, Oberösterreich", *Öst. Jahreshefte*, 38 (1950), 107f.; F. COTTRILL and W. PERKINS, *Antiquar. Journ.*, 21 (1941), 238; 22 (1942), 142f.; ROSTOVTZEFF, *op. cit.*, III, 1586, note 12; R. E. M. WHEELER, "Maiden Castle, Dorset", *Report Soc. Antiq. London*, 12 (1943), 290f., and especially now M. HELL, "Keltische Hufeisen aus Salzburg", *Archaeologia Austriaca*, 7 (1950), 92f.; *id.*, "Weitere keltische Hufeisen aus Salzburg und Umgebung", *ibid.*, 12 (1953), 44f.; *Gallia*, 12 (1954), p. 523.

39. Cp. M. CARY, *A History of Rome Down to the Reign of Constantine*, 2nd ed. (1954), 68f., and for the date of the Allia battle E. BICKERMANN, "Chronologie", in A. GERCKE-ED. NORDEN, *Einleitung in die Altertumswissenschaft*, III, 5 (1933), 30f.

40. Cp. for this date now A. J. SACHS-D. Y. WISEMAN, "A Babylonian King List of the Hellenistic Period", *Iraq*, 16 (1954), 202f., and in general BENGTSON, *op. cit.*, 377f.; H. BENGTSON, *Historia*, 4 (1955), 113.

41. Cp. with earlier bibliography HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 45, and chap. VII, note 50; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Laurium"; M. CROSBY, "The Leases of the Laurion Mines", *Hesperia*, 19 (1950), 189–312. Cp. also *Hesperia*, 10 (1941), 14f., no. 1.

42. Cp. with bibliography HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VI, note 44; M. FINLEY, *Studies in Land and Credit in Ancient Athens*, (1952); *id.*, "Land,

The use of manure in various forms, of special seeds and breeds of animals, the timing of ploughing, seeding, and harvesting, the administration of and the bookkeeping for small and large agricultural estates were treated as a fine art, and, during the fourth century B.C., stimulated mankind's first scientifically reasoning agricultural treatises[43]. Three-field crop rotation which was generally made use of during the Hellenistic Age appears to be alluded to by Xenophon, in a much discussed inscriptional rent contract from Euboea[44], as early as the fourth century B.C.

In Italy, Roman colonization[45] began systematically and permanently during the second quarter of the fourth century B.C. In its gradual advance, it revolutionized agriculture throughout the peninsula. As early as during the sixth and fifth centuries B.C. the wet, but fertile soils near the mouth of the Tiber and in neighbouring Central Italy had been drained and opened for intensive agriculture, especially with the help of the so-called *cuniculi*[46]. The cat, originally only a domesticated animal of Egypt, appeared then in Etruria also, to spread into Greece and over the whole world during the following period[47].

Debt, and the Man of Property in Classical Athens", *Polit. Science Quart.*, 68 (1953), 249f.; H. MICHELL, "Land Tenure in Ancient Greece", *Canad. Journ. Econ.*, 19 (1953), 245f.

43. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Treatises on agriculture".

44. ROSTOVTZEFF, *op. cit.*, III, 1617f., note 142, and FINLEY, *Studies etc.*, 250f., note 38, have doubted with insufficient arguments my suggestions in PAULY-WISSOWA, *Realenzyklopädie etc.*, spl. VI, art. "Sitos", col. 834, and *Wirtschaftsgeschichte etc.*, p. 386. Against A. JARDÉ, *Les céréales dans l'Antiquité Grecque*, I (1925), 86, the passages "Xenophon, Oec. XVI, 12–15" and the inscription "I.G. II², 2493 of 339/8 B.C.", as interpreted by me and some predecessors, support each other and have to be treated as rather plausible evidence for three-field crop rotation in classical Greece.

For the classical Hellenistic and Roman periods cp. also M. SCHNEBEL, "Die Landwirtschaft im hellenistischen Ägypten", I, *Münchner Beitr. zur Papyrusforsch. und ant. Rechtsgesch.*, 7 (1925); HEICHELHEIM, *Wirtschaftsgeschichte etc.*, Index *s.v.* "Dreifelderwirtschaft"; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Rotation of crops", "Triennial system of cultivation".

45. Cp. T. FRANK, *An Economic History of Rome*, 2nd ed. (1927), chap. IV; *id.*, *An Economic Survey of Ancient Rome*, I (1933), Index *s.v.* "Colonies/Colonization".

46. FRANK, *Econ. Hist. etc.*, chap. I, III.

47. Cp. S. SCHIPPER, "Cat or Marten?", *Archaeology*, 5 (1952), 25f.

All these structural changes inside and outside of the Greek *polis* territories of the period would not have been possible without an enormous increase in the number of slaves[48] for agricultural, industrial, trade, banking, and mining employment. Slavery, however, was still comparatively humane, with the exception of mining and a few other fields of labour. Free men were considered as entitled to take residence wherever they wished, to go to law on their own responsibility, to work as long and in whatever field of activity they desired, and were protected against seizure as property. As the late Professor Westermann proved[49] in an illuminating analysis of several hundred Delphic inscriptions, the Greek master could give his slaves three of these "four freedoms" without legally freeing them. Even Roman slavery was still rather patriarchal. Freed slaves of Roman masters had the rights of second class citizens and could expect their children to be treated as full citizens. Only during the subsequent period, mainly owing to a glut in enslaved prisoners of war and under the influence of a strict interpretation of Roman law, was slavery to become that scourge of mankind which was to destroy the happiness and even the lives of millions between 201 and 31 B.C. and to menace the population structure of Classical Antiquity.

IV. FROM 333 TO 31 B.C.

Alexander the Great established Macedonian government and Hellenic influence as far to the East as the Indus region and present-day Chinese Turkestan[50]. The Ganges region in India was subjected temporarily by Indo-Bactrian kings of Greek and Macedonian descent after 200 B.C. or so[51]. Ptolemaic kings of the third century B.C. had occupied Zanzibar, parts of the coast of East Africa and South

48. PAULY-WISSOWA, *Realenzyklopädie etc.*, spl. VI, art. "Sklaverei", col. 901–927, 944–948 (Westermann); W. L. WESTERMANN, "The Slave Systems of Greek and Roman Antiquity", *Memoirs of the American Philos. Soc.*, 40 (1955), chap. II.

49. Cp. the most instructive article of W. L. WESTERMANN, "Slavery and the Elements of Freedom in Ancient Greece", *Quart. Bull. Polish Inst. of Arts and Sciences in America*, (January 1943), 1–16; *id., op. cit.*, 35f.

50. W. W. TARN, *Alexander the Great*, I, II (1948); U. WILCKEN, *Alexander der Grosse*, (1931).

51. Cp. W. W. TARN, *The Greeks in Bactria and India*, 2nd ed. (1952), *passim.*

Arabia, and parts of the Sudan[52]. The direct seaway to India had been discovered in 117/116 B.C. with the help of the monsoon[53]. Finally, Rome began to conquer and colonize Spain (from 209 B.C. onwards), North Africa (from 146 B.C. onwards), the Central and North Balkan peninsula (from 229 B.C. onwards), and Gaul (from 125 B.C. onwards)[54]. By these means was the geographical and anthropogeographical structural revolution, already characterizing the preceding Greco-Roman development, intensified over a comparatively large part of the earth.

A central region of refined civilization (from Babylonia to Italy and Sicily) was surrounded by a much larger outer zone (from the Ganges to the Atlantic and from East Africa to South Russia and South Siberia) of assimilated barbarian kingdoms, Greek colonial states, Carthaginian territory, Roman outer provinces and subject allies, in which there were islands of *polis* economy or Roman municipal settlements from which the know-how of Hellenistic and Roman agriculture and craftsmanship was gradually appropriated by the native villagers. This was not a period of capital growth pure and simple. There also was considerable capital destruction and waste of capital, owing mainly to the Roman wars of conquest after 201 B.C., the civil wars, the slave hunting, and exploitation which characterized Roman provincial administration from 201 to 31 B.C.[55]

Widely accepted world currencies like the "Attic" currency of Alexander the Great and most of his successors, the "Phoenician" currency of the Ptolemies, and finally the "Attic" Roman *denarius* and its many subordinated currencies, made capital transfers easy[56].

52. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 25; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Arabia", "Nubia", "Sabaeans", "Somaliland".

53. Cp. BENGTSON, *op. cit.*, 437, 473; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Eudoxus", "Hippalus", "Monsoons".

54. T. FRANK, *An Economic Survey of Ancient Rome*, I–V, Index (1933–1940); *id.*, *Econ. Hist. etc.*, chap. IX.

55. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 6; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Depopulation", "Destruction", "Devastation", "Slavery", "Slaves"; F. W. WALBANK, "The Causes of Greek Decline", *Journ. Hell. Stud.*, 64 (1944), 10f.

56. *A Guide to the Exhibition of Roman Coins in the British Museum*, (1952); HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 2; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Coinage", "Coins", "Currency", "Monetary", "Money".

The first two coin issues were trimetallic, gold, silver, and bronze being comparatively well adjusted to each other, a pattern of refinement reached by Rome as late as the time of Julius Caesar. For the surprisingly modern capital investing and economic planning, in a comprising way, of the Hellenistic Empires in urban, agricultural, fishing, hunting, and mining production we have very instructive evidence from the kingdom of Syracuse[57], from Ptolemaic Egypt[58], with the largest banking organization of Antiquity, from the Seleucid Empire, Pergamum[59], and from the Hellenistic India of the Arthashastra of Kautylia[60].

During the third century B.C., much capital was brought to the Middle East where the interest rate[61] for capital investments was at least three times as high as in the Greek motherland. The capital destruction during the two subsequent centuries of Roman supremacy[62] was cushioned by new extensive colonization and town found-

57. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 48; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Lex Hieronica".

58. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Monopole", col. 158f. (Heichelheim); HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 21, 25, 28, 32, 33, 53; CL. PRÉAUX, *L'économie royale des Lagides*, (1939), *passim;* ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Bankers", "Banks", "Egypt", "Planned Economy in Egypt", "Ptolemies".

The planning economy of Ptolemaic Egypt, which was finally organized under king Ptolemy II Philadelphus, hellenized and revised, as we know now with certainty, a Pharaonic New Kingdom planning legislation, at least as far as agriculture was concerned, which is alluded to in the Joseph story of Book Genesis and about which we have been informed recently in many surprising details by an extremely important Hieratic papyrus text of enormous length from the 12th century B.C. Cp. F. M. HEICHELHEIM, "The Wilbour Papyrus", *Historia*, 2 (1953), 129f., and already ROSTOVTZEFF, *op. cit.*, 272f., 1380, note 84; TH. MOMMSEN, now in *Museum Helveticum*, 10 (1953), 161f.; H. BENGTSON, *ibid.*, 177.

59. Cp. F. M. HEICHELHEIM, "New Light on the Influence of Hellenistic Financial Administration in the Near East and India", *Economic History*, (February 1938), 1–12; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 29, 49, 53; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Planned economy, in Babylonia, in Pergamum"; D. MAGIE, *Roman Rule in Asia Minor*, II (1950), 1010f., notes 54, 56–61, 69, 71.

60. HEICHELHEIM, "New Light etc."; *id.*, *Wirtschaftsgeschichte etc.*, Index *s.v.* "Indien", and especially chap. VII, notes 2, 4, 26, 30, 32, 33, 48, 50; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Artashastra", "Kautilya".

61. Cp. F. M. HEICHELHEIM, *Wirtschaftliche Schwankungen der Zeit von Alexander bis Augustus*, (1930), 109f.

62. Cp. note 55.

ing in Italy and the Western Mediterranean area[63]. In addition, a new type of money appeared, the bill of exchange payable to any bearer, quite possibly rejuvenated and Hellenized from at present unknown Ancient Oriental survivals of the much discussed cuneiform bearer instruments of the second millenium B.C.[64] Three or so such documents are known from the Ptolemaic Egyptian countryside of the third/second and the first centuries B.C.[65] A number of much discussed references about capital transfer transactions in Plautus and Cicero[66] will have to be reinterpreted in the light of this new evidence also.

Planned colonization, more or less total economic planning for large territories, world currencies, and, I submit, the novel bills of exchange, made possible a changed appearance of the cities in accordance with human wishes and even more of the countryside from Spain, Morocco, and Gaul to India and Turkestan. The coastal cities, especially in the Mediterranean area, came under the influence of an intensive foreign trade with cheap mass products[67], an intensified market and domestic trade, and comparatively large workshops with, in some cases, as many as 300 or so employees and slaves, which often produced for trade over large distances[68]. Campanian bronze vessels and iron tools of the period are found, for instance, in Scan-

63. Cp. note 54.

64. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, 1st and 2nd ed., chap. IV, note 21; CH. TORREY, "The Evolution of a Financier in the Ancient Near East", *Journ. Near East. Stud.*, 2 (1943), 295f.

65. Strassb. Ostr. 510 (III/IInd cent. B.C.); Pap. R. Univ. Milan. I, no. 25 (74 B.C.); Pap. Rylands, IV, no. 580 (78 or 49 B.C.). Cp. also HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 32 (p. 1093); V. ARANGIO-RUIZ, "Il problema dei titoli al portatura in un nuovo papiro di Tebtynis", *Aegyptus*, spl. v (1936), 251f.; H. J. WOLFF, *Transact. Am. Philol. Assoc.*, 72 (1941), 427; *id.*, "Neue Quellen zum Zessionsrecht der Papyri", *Studi in Onore di Ugo Enrico Paoli*, (1955), 725f.

66. Cp. A. FRÜCHTL, *Das Geldgeschäft bei Cicero*, Phil. Diss. Erlangen (1912); E. J. JONKERS, "'Wechsel' und 'Kreditbriefe' im römischen Altertum", *Mnemosyne*, 3, ser. 9 (1941), 182f.; A. BERGER, "Encyclopedic Dictionary of Roman Law", *Transact. of the Amer. Philos. Soc.*, 43, 2 (1953), art. "Chirographum", "Delegatio", "Expromittere", "Nomen", "Permutatio (pecuniae)", "Symbolum", "Syngraphe".

67. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 7–23, 27–31.

68. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 43; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Ergasteria", "Factories", "Industry", "Mass Production", "Workshops".

dinavia, Scotland and Ireland[69]. Mediterranean textiles of this period have turned up in Mongolia[70].

Port-, dock-, and harbour-buildings, well-constructed lighthouses, some of which were to influence the architectural construction of certain Islamic minarets[71], *deigmata*[72], permanent markets for trade requirements[73], aqueducts[74], splendid private buildings of the rich[75], and use of brick and concrete[76] for the dwellings of the poor, characterized this brilliant and often well planned[77] Greco-Roman town development, the centre of which moved from Greece and the Middle East to Italy during the second century B.C. From the late fourth century B.C. onward improved caravan routes in the Middle East and especially the famous network of Roman military roads[78] made the rather still expensive overland communications of the world of Classical Antiquity more profitable than before.

At the same time, Hellenistic and Roman agriculture from Spain and Gaul to India owed much to Greek, Carthaginian, and eventually

69. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 24, 26; S. P. O'RIORDAIN, "Roman Material in Ireland", *Proceed. Royal Irish Acad.*, 51 C 3 (1947), 35–82.

70. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 26; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Mongolia".

71. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Leuchtturm" (Ebert), "Pharos" (Reincke); LEHMANN-HARTLEBEN, "Hafenanlagen etc.", *op. cit.*, chap. VII; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 33; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Harbours", "Pharos".

72. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 22; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Deigma".

73. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 22, 23, 27–31; cp. also note 35.

74. Cp. ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Aqueducts"; FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Aqueducts".

75. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Building activity"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 40; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Building".

76. Cp. M. E. BLAKE, *Ancient Roman Construction in Italy from the Prehistoric Period to Augustus*, (1947); FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Bricks", "Concrete".

77. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 40; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Town-planning".

78. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Roads"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 33; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Caravan routes", "Roads".

Roman agricultural science[79] and perhaps even more to hellenized Ancient Oriental and Greek applied mathematics. Not only became now Ancient Oriental applied geometry a fine art for measuring and subdividing agricultural soil, but the Archimedean screw, the sakye, and practically all other irrigation devices and machines which we now call typically Middle Eastern and Indian Oriental were, in fact, invented during the third century B.C. as a consequence of the glorious Hellenistic progress in mathematics. The norag, a new threshing device, was similarly useful, as were improved ploughs, sickles, and other agricultural tools[80].

Enormous semi-arid territories from the Middle East and North Africa to India, South Siberia, and, perhaps, China, which could not be irrigated by the few extant Ancient Oriental devices for irrigation and canals, now were opened for agriculture, to be destined to remain in cultivation, on the whole, up to the present day. Mathematically improved watermills, wine and olive oil presses, and other such devices[81], had a similar importance for the agricultural production of Roman Italy and the Roman provinces from North Africa to the Rhine. In addition, the agricultural plants and domesticated animal breeds of the whole enormous region from India to Spain and Gaul were now gradually exchanged, as far as the local climate permitted[82].

Cotton came to Egypt, to Babylonia, and even occasionally to

79. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 47, 49; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Treatises on agriculture".

80. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 47; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Archimedean pump", "Archimedean screw", "Irrigation", "Machines for drainage", "Norag", "Plough", "Threshing machines"; J. LAESSOE, "Reflexions on Modern and Ancient Oriental Water Works", *Journ. Cuneiform Stud.*, 7 (1953), 5f.; J. B. PRITCHARD, *The Ancient Near East in Pictures Relating to the Old Testament*, (1954), 259f.

81. Cp. note 13; PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Myle (1)" (Hug), "Tribula" (Hörle); HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 36; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Oil presses", "Water mills", "Wine presses"; E. C. CURWEN, "The Problem of Early Water-Mills", *Antiquity*, 18 (1944), 130f. *passim*, and especially 134 on Strabo XII, 3, 30; E. JÜNGST-P. THIELSCHER, "Catos Keltern und Kollergänge – Ein Beitrag zur Geschichte von Öl und Wein", *Bonner Jahrbücher*, 154 (1954), 32f.

82. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 46; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Acclimatization", "Animals", "Domestic animals" (and *s.v.* the animals and plants referred to above).

Greece. Apricot trees, lemon trees, melons, Asiatic horned cattle, Egyptian cats, ducks, and geese appeared in Greece and Italy. Italy received, in addition, sesame, several clover species, nut-, cherry-, peach-, certain plum-, certain fig-, quince-, almond-, chestnut-, walnut-, and other fruit and nut trees, cypresses, radish, flax, and beetroot. Still more important were the improvements of the period in breeding scientifically or importing superior breeds of horses, donkeys, elephants, camels, horned cattle, sheep, goats, pigs, dogs, cats, chickens, ducks, geeses, pigeons, pheasants, peacocks, rabbits (from Spain), bees, and even outlandish fish and oysters, special vines, date and fig trees, olive plants, and grain varieties from everywhere in the world where climatic and market conditions made this possible.

Even China[83] participated in this exchange of animals and plants to a smaller extent, receiving, during this period and that of the Roman Principate, bloodstock horses, lucerne clover, vines, walnut seeds, pomegranates, peas, certain cucumbers and onions, coriander, and other plants and animals, in exchange for the apricot tree, perhaps the peach tree, and goldfish. The main reason for these revolutionary changes in the agricultural pattern of the countryside from the Atlantic Ocean to the Yellow Sea was that a changeover from subsistence to market-farming characterized enormous territories of the globe, during the Hellenistic Age and that of the Roman Republic.

Wherever market economy had become profitable, the small and almost self-sufficient peasant estates of earlier centuries were on the retreat. In Sicily, Ptolemaic Egypt, South Arabia, large provinces of the Seleucid Empire, Hellenistic India[84] and more than occasionally in contemporary China[85], economic agricultural planning by the state bureaucracy treated, to a very far degree, the small and the (usually not much freer) large agricultural units of the regions in question as subordinated economic entities of a centrally organized provincial state agriculture. In those regions of the Carthaginian Empire, of Italy, and the Roman provinces[86] where the new agri-

83. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, note 26; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "China".

84. Cp. notes 57–60.

85. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IV, note 43.

86. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Sklaverei" (spl. VI, Westermann), col. 935, 950f., 958f., 962f.; CARY, *op. cit.*, chap. 18, 19; FRANK, *Economic*

cultural market economy was profitable, large independent slave estates, the much-discussed *latifundia*, took the place of numerous small free peasant homesteads. In both groups of territories, however, scientific rationalized agriculture was promoted, and was expounded simultaneously in textbooks like those of Theophrastus, the Carthaginian Mago, and the Latins Cato and Varro[87].

Agricultural tools, agricultural methods (manure, two crops in one year, three-field crop rotation, planned summer and winter grazing of horned cattle, vegetable production for city requirements, wine and olive oil production, and much more), estate and territorial planning, training of especially qualified personnel, and building of complementary estate workshops for products of craftsmanship were carefully adapted to the most recent and to the most profitable textbook advices[88]. Destructive tendencies were not wholly missing during this period. The population of the Mediterranean area decreased between 201 and 31 B.C., owing to the Roman wars of conquest, civil wars, social revolutions, and slave hunting. In Greece and Egypt a reduction of the area under agriculture and of the size of villages and town settlements appears from archeological excavations[89]. This temporary loss was, however, more than made good by the population growth and colonizing activities in the Imperium Romanum of the first and second centuries A.D.

The fertility potential of the soil was, under these circumstances, rarely endangered in Classical Antiquity. The ploughs and other agricultural tools of the period were not strong enough to cause what we now call soil deterioration and destruction. A visit to any museum where Greco-Roman agricultural instruments are preserved will bear this out. In Greece proper and in similar hilly and mountainous subtropical regions which were conquered by Rome or other enemies and depopulated by simultaneous slave hunting, those hillsides which were steep, but still suitable for vineyards, olive, vegetable gardens,

History of Rome, 2nd ed., chap. VI; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 47–49; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Domains", "Doreai", "Estates", "Slavery", "Slaves"; WESTERMANN, *op. cit.*, chap. XI, XII.

87. Cp. note 79.

88. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VII, notes 47–49; ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Agriculture", "Domains", "Doreai", "Estates".

89. Cp. note 55.

or modest fruit tree orchards, became barren wasteland, occasionally up to recent times. In such cases the artificial terraces, which had replaced forest and undergrowth during the Bronze and especially the earlier Iron Ages, were no longer protected by the farmer's watchfulness against rainstorms which now gradually washed away the small amount of subsoil held in place by human endeavours[90].

Malaria[91] was introduced into Sicily during the fourth century B.C. and in Italy during the Second Punic War, in both cases by Carthaginian soldiers from North Africa. Thereafter this, up to most recent times, endemic disease of the Appenine peninsula was the probable reason why the Maremma of Etruria and the Pontine marshes of the Romagna were abandoned by peasant homesteaders from the early second century B.C. onwards. However the main part of Italy, with the exception of these and some other fertile marshlands, was not seriously affected before the Middle Ages by this much discussed scourge of mankind.

Neither did the *latifundia*, as we know now for certain, destroy the natural soil fertility of any part of Italy, damage from overgrazing on estates devoted to cattle breeding obviously being negligeable because the owners adhered strictly to scientific agricultural textbook rules. That there was no perceptible deterioration of Italian soil fertility during Classical Antiquity from any causes whatever can now be proved irrefutably, against earlier majority opinions of modern experts, with the help of an aerial survey of practically the whole of Italy during World War II, taken by the Royal Air Force of Great Britain. The negatives of this strategic survey are now preserved in Oxford and accessible to interested scholars.

There appear[92] in these photographs evidences of the primitive

90. Cp. ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Destruction", "Devastation", "Soil, exhaustion of".

91. Cp. FRANK, *Economic Survey etc.*, vol. V (1940), 126; M. ROSTOVTZEFF, *A Social and Economic History of the Roman Empire*, (1926 English, 1931 German, 1932 Italian editions), Index *s.v.* "Malaria".

92. Cp. JOHN BRADFORD-P. R. WILLIAMS-HUNT, "Siticulosa Apulia", *Antiquity*, 20 (1946), 191f.; JOHN BRADFORD, "A Technique for the Study of Centuriation", *Antiquity*, 21 (1947), 197f.; *id.*, "Buried Landscapes in Southern Italy", *ibid.*, 23 (1949), 65f.; *id.*, "The Apulia Expedition: An Interim Report", *ibid.*, 24 (1950), 84f.; *id.*, *Ancient Landscapes in Europe and Asia—Studies in Archaeology and Air Photography*, (1955).

round huts of the pre-Roman natives of the Bronze and Iron Ages. The numerous ditches and walls of the agricultural *centuriatio* of the early Roman, simultaneously military and agricultural, *coloniae* in the times of the so-called Second and Third Samnite wars[93] can be outlined. The second century B.C., the time of a far reaching change-over from subsistence to market farming in many parts of Italy, brought into being larger units of land, yet practically all the earlier peasant plots remained in cultivation under old and new owners according to the air photographs.

Even now desolate Apulia, during the thirteen or so centuries of the periods of the Roman Principate, the Late Roman Empire, and the earlier Middle Ages, and those other regions of South Italy and Sicily where soil fertility is impaired at present remained fertile peasant country unchanged. The British air photographs, supporting trial excavations, and documents forgotten in Italian archives until a few years ago, have now irrefutably made obvious this conclusion. Spanish destructive methods of sheep breeding after 1300 A.D., and not Roman or early medieval agricultural mismanagement and mal-administration are the real cause for the present emptiness of so many regions of the South Italian countryside.

V. FROM 31 B.C. TO 284 A.D.

The period of the Roman Principate from Augustus to Carinus is Janus-faced[94]. The enormous Empire territory from Hadrian's Wall in Britain to the upper Euphrates, and from the Sahara, the first Nile cataract, Aden, and Zanzibar to the eastern banks of the Rhine, the northern banks of the Danube, the Carpathians of modern Romania, and the regions to the north, east, and west of the Black Sea were filled with more city settlements than ever before, far into the third century A.D. On the other hand, as early as the reign of Emperor Hadrian these cities began to shrink in size and population, a gradual process which was accelerated during the troubles of the third century A.D. to the point when hundreds, if not thousands, of such town settlements had to be abandoned for ever.

93. Cp. CARY, *op. cit.*, 94f., 97f., 104f.

94. For many of the views expressed by me in part V, cp. ROSTOVTZEFF, *Roman Empire etc., passim.*

The intellectuals of this period were proud of the splendour, the standard of life, and the civilization which manifested itself in the cities of the Roman Empire. They did not realize that the permanent structural changes of their age were not to be found in the cities, but in the despised agricultural sector of the Roman World, where certainly more than 90% of the inhabitants of the Roman Empire found employment and livelihood. The reason for the striking and unwanted shrinking of the cities during the last century or so of our period was that the capital and labour potential at the disposal of the Roman Empire authorities for urbanizing their world was totally insufficient.

The Roman silver and gold currency, which Augustus finally reorganized and its subsidiary provincial currencies were sadly depleted during the three centuries from Augustus to Carinus as a consequence of the generally passive trade balance of the Empire[95]. Contemporary authors, and numerous coin hoards from North Germany, Scandinavia, South Russia, Scotland, Ireland, South Arabia, Iran, the Russian Caucasus, West Siberia, and especially India bear witness to this. From Augustus to Marcus Aurelius[96] the ratio of copper to silver was stabilized at 1:56 or so; that of silver to gold fluctuated between 1:12 and 1:9 or so. In the fourth century A.D., on the other hand, we find a ratio of copper to silver of 1:125; of silver to gold fluctuating between 1:14 and 1:18. According to these figures much more than half of the silver and much more than two thirds of the gold which had circulated in Roman Empire territory during the reign of Augustus had left the Mediterranean World, mainly during the time from Nero to Carinus.

The canals, roads, harbour works, and docks[97] which were constructed from Britain to the Euphrates during the first, second, and even the troubled third centuries A.D. were very numerous. Many of them were never destroyed or could be restored easily, proving to be

95. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 5. For the Roman imperial coinage of our period cp. now especially H. MATTINGLY-E. A. SYDENHAM, *The Roman Imperial Coinage*, vol. I–5 (1923–1951); *Brit. Mus. Cat. Roman Imperial Coins* (H. MATTINGLY, ed.), vol. I–5 (1923–1950).

96. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 5.

97. Cp. FRANK, *Economic Survey etc.*, Index vol. *s. v.* "Canals", "Docks", "Harbors", "Roads"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 27.

very useful in maintaining the standards of the mainly agricultural and the nascent town economies of the early Middle Ages. Nevertheless, these means of communication were not sufficiently numerous and not sufficiently well planned to keep free trade with cheap mass products alive between the town communities of the Empire from Britain to the Euphrates in the same intensity as had been characteristic for the centuries from ca. 560 to 31 B.C. As early as about 100 A.D. most of the colonized Roman provinces in the East and West, and even much smaller subdivisions of some Roman provinces, had become practically self-sufficient economic units as far as the production of and trade in cheap mass products were concerned[98].

From the reign of Emperor Hadrian onward inter-provincial free trade was largely restricted, owing to the unbeatable local competition in cheap goods, to the valuable and luxury products, and to government transports for which captains and merchants had to be bound to their professions for an increasing number of cheap goods[99]. For government transports overland the *cursus publicus*[100], the imperial government's permanent courier and transport service over the Roman road system, became such a terrible burden, owing to its increased use by the army and the bureaucracy, that settlements close to imperial relay stations were abandoned occasionally. On the other hand, trade inside of the more or less recently urbanized provinces[101], like Britain, Gaul, much of Spain and North Africa, the Alpine and Danubian provinces, East Asia Minor, and the province of Arabia, reached a relative intensity which, on the whole, was to be permanent and was nowhere again to decline to pre-Roman and prehistoric levels, even under the impact of the most destructive migration waves of the early Middle Ages.

Local trade[102] inside of and between the old and new villages and

98. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Trade"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 10–18.

99. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 23.

100. Cp. FRANK, *Economic Survey etc.*, Index *s.v.* "Postal service"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 27; "Essai sur le cursus publicus sous le Haut-Empire Romain", *Mém. Ac. Inscr.*, 14, 1 (1950), 189f.; K. DE VOS, "Cursus Publicus—Transportation in Ancient Rome", *Public Affairs*, 15, 3 (1953), 8f.

101. Cp. note 98.

102. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Trade"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 25, 26.

estate settlements of the Empire reached a similar intensity which was to remain more or less permanent in post-Roman times also and was almost nowhere to vanish completely for short, and even less for long periods of time. During the second and third centuries A.D., however, the local trade and especially professional banking throughout the shrinking Empire town settlements became so unprofitable that the government authorities had to bind[103] many such specialized traders and bankers to their professions to maintain all essential services for armed forces, court, and Empire administration and to uphold, for the troubled town populations, at least an appearance of the intensity of local trade and banking transactions which had been characteristic for the Empire towns of the first century A.D.

As a consequence of the gradual strengthening of the new provinces and the growing importance, if not efflorescence, of townless agricultural districts everywhere in the Empire, the considerable "know-how" of Hellenistic-Roman craftsmanship not only spread to all new towns, but also to the villages and estates in the countryside from Britain to Arabia and Mesopotamia. The colonization efforts which filled the Empire with towns, villages, country villas, and the redoubtable *limes* fortifications[104], signal systems, and strategic roads which protected the often all too peaceful settlers against foreign enemies would not have been possible without ample use of concrete[105] and the untold number of brickworks[106] which sprang up throughout Italy and the provinces. More than that, this period was as creative in technical innovations as those of the preceding centuries of Classical Antiquity, a fact which is usually overlooked by modern scholars.

New inventions, mostly connected with technical methods of using air for profitable purposes, made Greco-Roman craftsmanship more efficient than ever. Improved bellows not only made mining safer, in the case of infiltrating inflammable or poisonous gases, but led eventually to the production of cast iron and of true steel for the first

103. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 25, 26.

104. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Limes" (Fabricius); *Oxford Class. Dict.*, art. "Roads" (Stevenson); FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Roads".

105. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Concrete".

106. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Bricks"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 33.

time in human technical history, probably about the third century A.D.[107] Windmills[108], in suitable regions, supplemented the earlier water mills from the first or second centuries A.D. More important still was the invention of glass blowing between 40 and 30 B.C.[109] which was made by unknown inventors on the Mediterranean coasts of either Egypt or Syria/Palestine. Cast glass had been known from the third millenium B.C., if not slightly earlier[110], but its production costs had been too high to permit inexpensive use for non-luxury purposes. Henceforth, vessels made of cheap blown glass were to be found also in the village huts of the poor.

Glass sarcophagi and especially glass windows were used by the upper and even the middle classes of the Empire. Roman administration and proper town life would not have been possible in Britain or on both sides of the Rhine and Danube without the Imperial magistrates and the well-to-do being protected against the Central European winter by glass windows, which permitted office work and reading at all times of the year. Urban civilization had conquered the northern moderate zone of our globe for good! Under these circumstances a completely novel industry of glass-making sprang up during the first century A.D. Eventually it was mainly concentrated in Cologne, some other cities of Gaul, Rome, a few other Italian towns, Alexandria, Antioch, and several smaller cities of Syria, Asia Minor, and the Balkan peninsula, achieving a permanent and most important contribution of Classical Antiquity to man changing the face of the earth.

In the newly colonized and urbanized territories of the Roman Empire, the Hellenistic-Roman "know-how" in craftsmanship had been appropriated by the city settlements first, as is only natural. When these shrank in size again during the second and third centuries A.D., the Empire government had, in the more ancient centers of civilization and especially in trade, craftsmanship, and banking, to bind many professional workers to their jobs to prevent endanger-

107. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Stahl" (Rommel); FRANK, *Economic Survey etc.*, V (1940), 186f.

108. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 33.

109. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Glassware"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 35.

110. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, Index *s.v.* "Glas".

ing the safety of the Roman armies and the imperial administration[111]. What happened simultaneously in the countryside was, however, of far greater historic importance than this process of decay.

Throughout the Empire, the large estates[112] which worked for both local and farther away markets gradually expanded their own workshops for those crafts, whose production was profitable and suitable for their own economic pattern. The competition from the sale of the surplus of these estate workshops in nearby free markets endangered the livelihood of many city craftsmen throughout the Empire from the second century A.D. onwards, and induced many insufficiently employed town-dwelling craftsmen to take service on country estates. Through such newcomers the simple villagers, freeborn or slaveborn, were gradually instructed in all technical inventions and devices of Classical Antiquity which were apt to improve the peasant's standard of life and income.

The beauty of Samian and other pottery, of bronze, iron, steel, and glass tools and vessels, and some technical niceties of earlier mechanical devices were sacrificed, in consequence of this process, to local cheap production by village and estate craftsmen. As a result, however, the average villager throughout the Empire of the Roman Principate had more technical comfort and assistance at his disposal than the Athenian *polis* proletarians during the period from the Persian to the Peloponnesian wars or the Roman city proletarians of the time of the Gracchan brothers had dared to dream of. More important still, the difference between the standards of life of a small and dependent farmer in the countryside of the Empire and that of the contemporary city proletarian of the Roman Principate had become negligible, except in Rome, Alexandria, Antioch, and two or three other ancient and famous urban centers which were well cared for by the government.

This process was intensified by the technical improvements[113] in

111. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 29.

112. Cp. FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Estates imperial", "Estates private"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 42, 43, 44.

113. Cp. notes 13, 79, 81; FRANK, *Economic Survey etc.*, Index vol. *s.v.* "Agriculture"; HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 39–41, 44; J. A. RICHMOND, *Roman Britain*, (1955), 109f., Index *s.v.* "Fenland"; F. STÄHELIN, *Die Schweiz in römischer Zeit*, 3rd ed. (1948), 389f., 425f.

agriculture which can be observed in regional variations during different decades of the first, second, and third centuries A.D. With the help of the fully developed methodical experience of Greco-Roman agricultural science and technique, large new territories were taken into cultivation permanently. In England, fertile fenlands of East Anglia from Suffolk to Lincolnshire and similar marshlands were drained, protected against the incursions of the sea, and the fosse and other still existing canals constructed to transport grain from these and other imperial and private estates to the garrisons and campfollowers in North England and the Scottish Lowlands. Vineyards producing local and world-famous beverages up to the present time were to be characteristic of the hilly countryside of Gaul and the Rhinelands. The regions on both sides of the Danube were similarly opened up. In Holland the sea was brought under control as never before with the help of well planned ditches, drainage systems, and canals. During the early Middle Ages they were preserved and kept in good order by the Salian Franks, but were unable to withstand the rising water levels of this period. In the fenlands of East Anglia the Roman drainage works and many Romano-British agricultural settlements survived similarly beyond the time of Roman occupation, to be given up gradually under the earlier and later Anglo-Saxon kings before Domesday Book was compiled.

In regions bordering the deserts of North Africa and the Middle East, agricultural techniques were used which were to be imitated successfully by French colonizers in Algeria, Tunisia, and Morocco during the nineteenth and twentieth centuries. In these semi-arid regions with slight soil moisture, incipient olive plantations had to be kept alive for two or three years by transporting water from afar to the new plants. However, once the roots of the olive trees reached the sub-surface water, the very desert became habitable and profitable agricultural soil. In Egypt, careful Roman flood-control measures and new irrigation canals made productive again those territories of the Nile country which had been given up as desert or marsh lands during the last two centuries of weakening Ptolemaic rule.

In Transjordania, the Negeb, and the Syrian desert regions countless new cisterns and irrigation systems preserved the life-giving water of heavy rainfalls for years and, exactly as in the state of Israel at present again, made village settlements and occasionaly even new

towns possible everywhere. The small Roman province of Mesopotamia, which was of the highest strategic importance, was most thoroughly colonized during the third century A.D. Here and in Britain urban decline was delayed up to the fifth century A.D., in Roman Arabia even to the later sixth century A.D.

In Italy and elsewhere there occured a novel wheeled plough, and other agricultural instruments were improved also. The agricultural plants and domestic animals which had been adapted to the countries from Babylonia and Syria to Italy during the preceding period were now used everywhere in the Roman Empire, as far as the climate permitted, first on large estates and on agricultural soil annexed to the new town settlements, and thereafter by the simple villagers[114]. The slave[115] estates of the preceding period vanished, however, as early as during the reigns of Augustus and his immediate successors. The *Pax Romana*, which the world owed to the first Princeps, made slave hunting of the earlier profitable *en gros* pattern almost impossible, and the numbers of cheap slaves from victorious campaigns of conquest were reduced to a trickle. In consequence the market price of slaves soon rose so highly that to employ menial agricultural slaves in large numbers became unprofitable.

Only rump estates[116] therefore were cultivated scientifically with the help of a comparatively small number of unfree agricultural and household servants and a library containing the main agricultural text books of the past and present. The largest part of the *latifundia* of the republican centuries and of their successors in the provinces were instead farmed out to small peasants, by modern scholars usually called *coloni*, who had to pay a contractual rent, took over some contractual work on the main estate, received occasional technical agricultural advice from experts on the main estate, and were eventually offered contracts for plots on imperial and private estates which not only covered the lifetime of an individual farmer, but even that of his sons and grandsons.

Furthermore, it was now profitable for many private large estate owners and administrators of imperial estates to free experienced

114. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 39, 40.

115. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 47; WESTERMANN, *op. cit.*, chap. XIII–XVII.

116. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, notes 42, 43.

agricultural slaves, permit them to marry, and to provide them contractually with land as *coloni*. Germanic and Eastern prisoners of war were similarly settled on imperial and private estate soil, although with some police supervision and without the legal protection given to Roman citizens and to provincials in good standing. On many of these plots which had been given over to *coloni*, subsistence farming, more or less gradually, replaced market farming again, but without the agricultural production potential and the technical comfort of the Roman Empire peasantry relapsing to pre-Hellenic, pre-Roman, or prehistoric levels.

Due to the troubles of the third century A.D., the *latifundia* of the time of the Principate with their rump estates and *coloni* often changed over from imperial administration or from rich city owners to proper *patrocinia*[117]. Army officers retired to such estates as their permanent abode, maintained mercenary private guard units *(bucellarii)*, and protected their lands and those of their *coloni* not only against foreign invaders, inimical or friendly Roman army units appearing in their region, but also against visits from the imperial tax collectors. Gradually numerous free villagers, unbearably oppressed by plundering soldiers and the tax collectors, voluntarily ceded their farmsteads to owners of neighbouring *patrocinia*, to be protected as their *coloni*. The *patrocinium* owners as a rule knew how to use their influence at the imperial court and with the provincial magistrates to obtain permission to collect all taxes from their *coloni* directly and to pay no more than a fixed lump sum from the whole *patrocinium* territory into the imperial treasury.

The native barbarians everywhere outside of the Empire's frontiers, with the exception of the inhabitants of the Parthian kingdom, had so far been completely unable to transplant and adapt to their own needs the pattern of the Greco-Roman city settlements without becoming Roman allies. The new Empire peasantry, however, with their semi-scientific technical "know-how", village craftsmanship, use of a wide variety of agricultural tools, plants, and domesticated animals could be imitated more easily, especially as prisoners of war from all neighbouring barbarian countries had been trained as *coloni* in Roman agricultural production by Roman masters. It is not sur-

117. Cp. ROSTOVTZEFF, *Roman Empire etc.*, chap. 10–12; E. STEIN, *Geschichte des spätrömischen Reiches*, I (1928), 19f.

prising, under these circumstances, that from the second century A.D. onwards agriculture in Ireland, Scotland, free Germany, Scandinavia, Eastern Europe, and West Siberia[118] began to appropriate the tools, plants, animals, and technical methods of Classical Antiquity.

The coasts of East and West Africa, the Sudan, Abyssinia, the more backward regions of the Middle East, the Arabian peninsula, and Iran had been subject to similar trends from the third century B.C.[119] and continued their agricultural refinement with stronger intensity than before. This is borne out by the results of excavations and by the thousands of technical words which are early intruders from Latin and Greek into practically all languages of Europe, North Africa, and West Asia, and are connected with Greco-Roman agriculture and village craftsmanship. A revolution of village life and village production began, in consequence, throughout a territory many times larger than the Roman Empire. Eventually, in this way, the agricultural foundations for the Western, Islamic, and Russian medieval civilizations were laid.

The population of the Roman Empire, at the time of Augustus, amounted to between 50 and 70 millions[120], an estimate which has been accepted tentatively by the overwhelming majority of experts. Imperial Rome, the probably largest city of the Empire, had never more than 697924 permanent residents, as has been practically proved recently[121] with convincing archaeological and cartographic arguments. The shrinking of the town settlements throughout the Roman Empire (with the exception of Britain, Arabia, and Mesopotamia) during the third century A.D. has led many scholars to the assumption that this was a period of considerable population de-

118. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 9.

119. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. VIII, note 19.

120. Cp. E. STEIN, *op. cit.*, I, 3.

121. Cp. A. VON GERCKAN, "Zur Einwohnerzahl Roms in der Kaiserzeit", *Röm. Mitteil.*, 55 (1940), 149f; *id.*, "Weiteres zur Einwohnerzahl Roms in der Kaiserzeit", *ibid.*, 58 (1943), 213f.; *id.*, "Grenzen und Grössen der vierzehn Regionen Roms", *Bonner Jahrb.*, 149 (1949), 5–65. The views of Professor von Gerckan were mainly opposed by E. STEIN, *Histoire du Bas-Empire*, II, 842; G. CALZA-G. LUGLI, "La populazione di Roma antica", *Bull. Commiss. Arch. di Roma*, 69 (1941), 142f.; G. LUGLI, "Il valore topografico e giuridico dell'insula' in Roma antica", *Rend. Pontif. Accad. Rom. di Arch.*, 18 (1941/1942), 191–208.

crease, to be followed by a second period of decline during those Late Roman centuries when similarly troubled conditions recurred, especially in Gaul, Britain, Spain, the Danubian provinces, and North Africa.

Unfortunately, our sources do not permit, at the moment, absolutely convincing answers to these difficult population questions. Excavations, however, show that a change-over from town to estate organization did not necessarily mean a decrease of population[122], and that, different from the urban development of the third century A.D., the number of peasant plots and villages certainly did not overall decrease between the reigns of Hadrian and Carinus, especially as Germanic and other prisoners of war replaced in large numbers temporary losses from the serious civil wars and foreign invasions of this period. In addition, the Greco-Roman practice of exposing new-born babies to die, if the father wished it so, was virtually discontinued wherever the population masses turned to Christianity[123]. Therefore, it seems rather likely to me that the population of the Roman Empire, if it did not increase, at least held its own during the third century A.D., exactly as the late Professor Delbrück maintained from mainly strategic considerations[124]. The Roman Empire seems to have gained in its agricultural population at least as much during the third century A.D. as it lost in the town settlements, which is in full agreement with the economic rule that market farming and capitalistic economy empty the countryside, that subsistence farming, however, has the opposite effect.

VI. FROM 284 TO 565 A.D.

The Late Roman period, from our point of view, cannot be classified as a time of outright decline. It is true that the great masterplanner, Emperor Diocletian, and his more or less efficient successors during the fourth and fifth centuries A.D. were able only to strengthen and

122. Cp. now, especially for the province Achaia, U. KAHRSTEDT, *Das wirtschaftliche Gesicht Griechenlands in der Kaiserzeit*, Diss. Bernenses, vol. I, 7 (1954), *passim*, and F. M. HEICHELHEIM, *Kyklos*, 8 (1955), 92f.

123. Cp. ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Exposure of children"; V. EHRENBERG, *The People of Aristophanes*, 2nd ed. (1951), 199; RICHMOND, *op. cit.*, 117f.

124. Cp. H. DELBRÜCK, *Geschichte der Kriegskunst*, 2nd ed., II (1921), 233f.

maintain city life in their dominions by asking for very serious sacrifices from practically all inhabitants of the Roman Empire[125]. The help of extensive and permanent state assistance given to most towns of the Empire and planned state control over the changing surplus potential of the agricultural sector upheld a vital minimum for Empire defense and civilized Empire administration. In the subsequent East Roman Empire, however, city life recovered, came into its own again without much state help as early as the fifth and sixth centuries A.D. Constantinople and other Eastern Roman town centers, in a gradual process, continued to increase in size[126].

Even in territories like Britain, after they were lost to the Empire for good, money economy and local money trade remained in being to a noticeable extent, at least in certain regions. Our museums today include the so-called *minimi* and *minimissimi*, tiny bronze coins issued by local and probably private mints for the small shopping transactions of the population during the troubles of the third century A.D. and again, after the Roman administration had left Britain permanently in the early fifth century A.D. and all Roman mints in this province had closed down[127]. Diocletian and Constantine the Great, early in our period, were able to create a famous gold currency, that of the *solidus* or the later Besant[128], which was to be essential for trade transactions of the world from Scotland and Scandinavia to India and the Chinese frontier regions, and from Russia to Abyssinia for more than a full millenium, and was not adulterated or diminished in weight for almost a thousand years.

For bills of exchange, known for the later part of the period from

125. Cp. PAULY-WISSOWA, *Realenzyklopädie etc.*, art. "Valerius" (142 f., Ensslin); W. SESTON, *Dioclétien et la Tétrarchie*, I, Bibl. des Ecoles franç. d'Athènes et de Rome, 162 (1946).

126. Cp. E. STEIN, *op. cit.*, I, 195 f., note 6; *id.*, *Histoire du Bas-Empire*, II, 759, 842.

127. Cp. C. H. V. SUTHERLAND, "Minimi, Radiate and Diademed", Transact. Internat. Num. Congress 1936, (1938), 252 f.; *id.*, "The Canterbury Minimissimi Again", *Num. Chron.*, 6, ser. 9 (1950), 242 f.; PH. V. HILL, "Barbarous Radiates, Imitations of Third Century Roman Coins", *Numism. Notes and Monogr.*, 112 (1949). For Gaul cp. W. REINHART, "Die früheste Münzprägung im Reiche der Merowinger", *Deutsches Jahrbuch für Numismatik*, 2 (1939), 37 f.

128. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 4; OSTROGORSKY, *op. cit.*, Index *s.v.* "Hyperpyron", "Münzwesen", "Nomisma", "Solidus"; P. GRIERSON, "The Debasement of the Besant in the Eleventh Century", *Byz. Zeitschr.*, 47 (1954), 349–394.

Alexander to Augustus[129], we cannot prove, on the basis of present evidence, that they survived into the centuries of the time of the Principate and especially the highly refined period of urban economic life from Augustus to Trajan. Since the fifth century A.D., however, bearer-documents are mentioned again in the Talmuds, Iranian, Arabic, and Byzantine sources indicating a striking rejuvenation of money and town economy in Western Asia and the Eastern Mediterranean area[130]. These Late Roman and Oriental bearer-documents are the models for the bills of exchange in Latin which initiated medieval conditions in this field in Frankish Western Europe.

Foreign trade in cheap mass products, a typically Hellenic and Roman structural refinement of the economic pattern of the Western World, had to be almost exclusively organized and kept alive by the Roman state during the first two centuries of our period, but gradually stood again on its own feet in the Eastern Roman Empire from the fifth and sixth centuries A.D. onwards[131]. Only to the west of the sphere of influence of Constantinople, during the later centuries of our period, was local city trade and especially banking on the down grade[132]. Trade in luxury products[133] increased, however, almost everywhere in intensity during the Late Roman centuries in West and East, and new products like steel weapons and tools, and especially Asiatic and Mediterranean silk textiles supplemented the earlier range of valuable foreign trade goods.

Naval transport conditions and those of the overland transports[134] on most Roman roads were inferior only in times of war to those of the second and third centuries A.D. The technique of the overland transports was even improved during the Byzantine centuries when the originally Chinese inventions of saddle and stirrup gradually became known in the eastern Mediterranean area and subsequently farther west[135]. Many technical peculiarities of Greco-Roman crafts-

129. Cp. notes 65, 66.

130. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 5; U. NICOLINI, *Studi storici sul paghero cambiario*, (1936).

131 Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX., notes 13, 14, 15, 17, 20.

132. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, notes 29, 30, 32.

133. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, notes 12, 13, 15, 16, 18, 19, 20, 21, 22, 23.

134. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 33.

135. Cp. LEFEBRE DE NOËTTES, *L'attelage, le cheval de selle à travers les âges*, (1931).

manship came more and more to be used in villages[136]. Special skills which were not profitable in the agricultural or the independent urban sectors were kept alive and often improved in the famous imperial factories, mainly of Constantinople, where privileged craftsmen worked for the requirements of the imperial court, the army and navy, the administration, and occasionally for private buyers[137].

Neither were new technical inventions and even new professions of craftsmen missing. Better and cheaper steel and cast iron were now made. The earliest chemical recipes are known from papyrus documents of the early fourth century A.D.[138] The first reference to the Greek fire[139], a potent mixture of unburnt chalk, petrol, and saltpeter belongs to approximately 500 A.D. An independent silk weavers' craft began to develop after 552/553 A.D.[140] Numerous more or less efficient craftsmen of various professions were resident on the soil of the *patrocinia* and working for local needs[141]. More important still was a completely novel Late Roman type of economic unit which combined numerous professions of craftsmanship with mainly agriculture.

In Egypt of the early fourth century A.D., monasteries sprang up in which manual labour was considered to be a religious duty[142]. In large Egyptian units of this kind, like the "White Monastery", there were more craftsmen at work and often in a coordinated manner

136. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, notes 44, 54.

137. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, notes 41, 42, 54.

138. Cp. with bibliography HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 37; furthermore Pap. Jand. V, no. 85; R. HERZOG, "Zwei griechische Gedichte des 4. Jahrhunderts aus St. Maximin in Trier", *Trier. Zeitschr.*, (1937), 121 f.; K. REINKING, *Die in den griechischen Handschriften aus dem Altertum erhaltenen Vorschriften über Wollfärberei*, (1938); ROSTOVTZEFF, *op. cit.*, Index *s.v.* "Alchemistic treatises", "Bolus Democritus", "Chemistry"; J. RUSKA, *Tabula Smaragdina*, (1926); F. SH. TAYLOR, *The Alchemists, Founders of Modern Chemistry*, (1952); M. WELLMANN, *Die Physika des Bolos Demokritos und des Magiers Anaxilaos aus Larissa*, (1928).

139. Cp. OSTROGORSKY, *op. cit.*, Index *s.v.* "Feuer, griechisches"; F. M. HEICHELHEIM, "Römische Sozial- und Wirtschaftsgeschichte", *Historia Mundi*, IV (1956), 470/471; M. MERCIER, *Le Feu Grégeois*, II (1952).

140. Cp. E. STEIN, *Histoire du Bas-Empire*, II, Index *s.v.* "Soie"; F. M. HEICHELHEIM, "Byzantinische Seiden", *Ciba-Rundschau* (German, April 1949; English, August 1949; French, May 1953), § 2.

141. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 44.

142. Cp. F. M. HEICHELHEIM, art. "Domäne", *Reallexikon für Antike und Christentum; id.*, "Römische Sozial- und Wirtschaftsgeschichte", *Historia Mundi*, IV, 480; E. STEIN, *Histoire du Bas-Empire*, II, 620 f.

than in any Greek *ergasterion* or Roman *fabrica* of earlier centuries. As far as agriculture was concerned such monasteries had access to all Greek and Latin works on agricultural science or related subjects, either in the original or in translations into an Oriental language of the Middle East. These monasteries proved especially able in making desert lands or, from the sixth century A.D. onwards in the West, forest, fen, and other waste lands as fertile as the climate and the agricultural knowledge of their time permitted. Many monasteries even specialized in the back-breaking work of such agricultural colonization.

It is well known that, after tentative experiments in Italy, the Provence, Spain, and North Africa, the Benedictine monasteries of the sixth century A.D. finally found the pattern by which this originally Egyptian form of religious community life could become an integral stimulus for the Western Middle Ages. The monasteries prevented any real collapse of civilization in the countryside and even occasionally in the earliest new cities, any far reaching long term agricultural deterioration even in troubled times, or any permanent giving up of still potentially fertile and profitable agricultural soil. On the whole, it is obvious that Late Roman agriculture had remained as active and open to improvements as in earlier ages, in spite of all the difficulties and troubles of these centuries of migrations in West and East.

The silk worm and the specialized, intensive cultivation of the mulberry plant were introduced into the East Roman Empire from Central Asia as late as 553 A.D. or so[143]. New varieties of cucumber, better breeds of dogs, horses, camels, and hunting birds were produced, and the number and specialization of agricultural tools further increased. The bloodstock horse came to the Arabs from Byzantine and Persian studs during the sixth century A.D., if not earlier. The inherited agricultural text books were supplemented by new works and by more or less modernized and embellished translations[144]. Modern authors often expressed severe judgements about Late Roman agricultural conditions, because serfdom of the originally free *coloni*, which had begun during the third century A.D., became practically universal during the fourth and the early fifth centuries A.D., swallowing up most of the free villagers also[145].

143. Cp. note 140.
144. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, notes 48, 49.
145. Cp. HEICHELHEIM, *Wirtschaftsgeschichte etc.*, chap. IX, note 48.

But the critics of this well known antilibertarian development usually forget that it was only temporary as far as the Eastern Roman Empire was concerned[146]. Feudalism was suppressed, to a very marked degree, and the binding of the peasant to an estate was lifted or mitigated from the sixth century A.D. onwards, a change which was strongly supported by the Christian Church. In the seventh century A.D., Byzantine peasantry was organized as a rule in military *(themata)* and civilian villages and was practically free again. The beginnings of this structural change of great world historic importance appear as early as the sixth century A.D. in the papyrus evidence from Egypt, in chalcedonian and monophysitic Church authors of the sixth and early seventh centuries A.D., and in the much discussed agricultural reform legislation of Pope Gregory the Great[147].

Only the West under Visigothic, Frankish, Burgundian, and Lombard rule remained dedicated to peasant serfdom for the Romance speaking farm population from political reasons during these centuries. But even so, the population of the Western countryside did not, as a rule, decrease nor was soil fertility undermined. In the Frankish, Burgundian, Alemannic territories and in Anglo-Saxon Britain, modern excavations have revealed numerous free Germanic villages on the soil of earlier imperial and private Roman estates, evidence of many families making a living where only a small agricultural and administrative staff of servants, employees, and *coloni* had dwelt before. Recently discovered Latin documents from North Africa under Vandalic rule show that even here life was certainly not as much disturbed as Latin and Greek authors report[148].

In Italy, air photography[149] has proved that whatever damage, in the sixth and seventh centuries A.D., Ostrogoths, Lombards, Frankish, and Byzantine armies may have done to agriculture during

146. Cp. OSTROGORSKY, *op. cit.*, Index *s.v.* "Bauern", "Feudalismus", "Grossgrundbesitz", "Themen"; HEICHELHEIM, *l.c.*, *Historia Mundi*, IV; F. DÖLGER, "Zur Ableitung des byzantinischen Verwaltungsterminus Θεμα", *Historia*, 4 (1955), 189f.; W. ENSSLIN, "Der Kaiser Herakleios und die Themenverfassung", *Byz. Zeitschr.*, 46 (1953), 362f.

147. Cp. note 142.

148. *Tablettes Albertini, Actes privés de l'époque vandale (fin du V^e siècle)*, ed. by Ch. Courtals, L. Leschi, Ch. Pérat, Ch. Saumagne, I, II (1952). For Britain cp. now J. A. RICHMOND, *op. cit.*, 100f., 119f., 183f.

149. Cp. note 92.

temporary, but violent warlike operations was repaired quickly, the Benedictine monasteries even improving regionally on the earlier state of affairs. As the much lamented Professor A. Ch. Johnson[150] still recently has pointed out, Egyptian agriculture and similarly the agriculture of Syria and Palestine, do not seem to have suffered at all, except from temporary Persian invasions. Transjordania[151] and other semi-desert territories of the Late Roman Middle East flourished more than ever, especially as these regions were a favourite haunt of eremites and monasteries, and experienced, in addition, an enormous population increase from Arabic immigrants. This occured long before Islam, a migration movement which was especially intensified, after a dam break of Marib in South Arabia in 450 A.D. and the final collapse of this technically too much enlarged and overburdened artificial irrigation system of South Arabia between 542 and 570 A.D. had diminished enormously the agricultural productivity of this region[152].

Asia Minor and the Greek-speaking, southern part of the Balkan peninsula were made the center of the East Roman Empire during this period and experienced in consequence a sizeable increase in their town and village population[153]. The political weakness of the Late Roman Empire both in the East and the West, the final loss of the Western Roman provinces, of Italy, the North Balkan regions, and the Late Roman Middle East was not caused by a permanent economic decline in the Empire territory or a population decrease[154]. The main overall reason for this far-reaching political upheaval was

150. Cp. A. Ch. Johnson-L. C. West, *Byzantine Egypt*, Princeton Univ. Stud. in Papyrol., 6 (1949); A. Ch. Johnson, *Egypt and the Roman Empire*, (1951).

151. Cp. F. M. Heichelheim, "Geschichte Syriens und Palästinas von der Zeit des Kyros II. bis zur islamischen Eroberung", *Handbuch der Orientalistik*, ed. by B. Spuler, (forthcoming).

152. Cp. Pauly-Wissowa, *Realenzyklopädie etc.*, art. "Mariaba" (Grohmann).

153. Cp. E. Gren, "Kleinasien und der Ostbalkan in der wirtschaftlichen Entwicklung der römischen Kaiserzeit", *Uppsala Univ. Arsskrift*, 9 (1941), *passim*, and especially chap. V; Heichelheim, *Wirtschaftsgeschichte etc.*, chap. VIII, note 16; *id.*, "Geschichte Kleinasiens von der Zeit des Kyros II. bis zu Kaiser Heraklios", *Handbuch der Orientalistik*, ed. by B. Spuler, (forthcoming).

154. I disagree here with A. E. R. Boak, *Manpower Shortage and the Fall of the Roman Empire in the West*, (1955). The distinguished author has collected and analyzed valuable evidence which however can be used against his overall hypothesis in many cases.

that the Imperium Romanum, and also the Persian kingdom, had ceased to be the only civilized territories of the world outside of India and China.

The technical methods and the essentials of Greco-Roman civilization in their Christian reformulation were taken over during the last period of Classical Antiquity by practically the whole of Europe, large parts of West and Central Asia, East Africa, and Arabia. As a result, Empire defense became difficult and often impossible, especially as cavalry had become superior to infantry since the third century A.D.[155] The number of Empire citizens was all too small and utterly insufficient, in the West and even in the East, who had grown up in a stable with horses and therefore were able to ride their mounts as armoured cavalrymen or horsed archers into victorious battle like modern cowboys in rodeos. Only after stirrup and saddle had become general outside of China[156] satisfactory horsemanship could be acquired by adult draftees who had never seen much of horses during their earlier lives. Under these circumstances the military superiority of the Roman army was undermined for good, although the inhabitants of Rome, as late as during the sixth century A.D.[157], proved to be as heroic and brave as they had been under the Roman Republic, whenever fate gave them still more or less equal chances in infantry warfare.

Finally new civilizations arose in what is now the Islamic Middle East, in Abyssinia, in the Romance, Germanic, Celtic, and Western Slavic speaking European West, and in mainly Russian Eastern Europe. These daughter civilizations were, in the course of time, to surpass by far their Greco-Roman mother civilization in many fields of human endeavour, but also in reckless soil destruction and merciless exploitation of the potentialities of our globe inside and outside the territories which had flourished during Classical Antiquity.

CONCLUDING REMARKS

The pattern of trends in ancient economic history which we outlined in the foregoing enables us, to a certain degree, to understand even some economic problems of modern times better than without such

155. Cp. E. Stein, *op. cit.*, I, 91 f.
156. Cp. note 135.
157. Cp. E. Stein, *Histoire du Bas-Empire*, II, chap. VI, X.

comparisons[158]. There are modern economists of high repute[159] who believe that a disturbing element has appeared in the modern capitalistic cycles of economic fluctuations which advance, retreat, bring benefits and catastrophes in Western economies since 1822, much discussed statistical curves which extend over between 7 and 11 years and which are caused by powerful forces contributing considerably to modern man changing the face of the earth.

In Classical Antiquity cyclical movements of an economic nature can be proved to have developed during the time between Alexander the Great and Augustus, probably continuing in a weaker pattern up to the reign of emperor Trajan, if not into the third century A.D.[160] These fluctuations, in fact, are similar to the so-called "long waves", statistical curves to be observed for Europe during the 17th and 18th centuries[161]. Their influence on Hellenistic and Roman economic, social, political, and occasionally religious changes and upheavals[162] is obvious, although they are still comparatively primitive.

Similarly as in our present 20th century the creation of large civilized areas of a non-capitalistic organization[163] and in addition the decline of Western colonialism[164] may have disturbed the modern cycles and the whole economic structure of the Western World, the change of the economic balance in Classical Antiquity from the traditional town economy of the Greeks and Romans to a well organized and more and more civilized countryside economy, disturbed the

158. Cp. F. M. HEICHELHEIM, "On Ancient Price Trends from the Early First Millenium B.C. to Heraclius I.", *Finanzarchiv*, 15 (1955), 504f. For the period from 250 to 230 B.C. we find that a free market economy, exactly as in recent centuries, shows a better and healthier long term resistance to price decline and selling pressure during times of glut than the most carefully organized Hellenistic planning economy, that of Ptolemaic Egypt.

159. Cp. A. SPIETHOFF, *Die wirtschaftlichen Wechsellagen*, I (1955), 9f. (E. Salin, preface), 13f., 141f. (Spiethoff).

160. Cp. F. M. HEICHELHEIM, *Wirtschaftliche Schwankungen etc., passim; id., Finanzarchiv*, 15, *l.c.* For the time of the Roman principate we still find characteristic price declines near the middle of the first, second, third, and perhaps even fourth centuries A.D. which might well be interpreted as cyclical. Cp. HEICHELHEIM, *Wirtschaftliche Schwankungen etc.*, p. 70f., note 1; *id., Finanzarchiv*, 15, p. 508, 509, 510.

161. Cp. SPIETHOFF, *op. cit.*, 89f.

162. Cp. now HEICHELHEIM, *Finanzarchiv*, 15, *l.c., passim.*

163. Cp. SPIETHOFF, *op. cit.*, 14.

164. Cp. SPIETHOFF, *op. cit.*, 9.

economic pattern of Classical Antiquity with growing intensity during the first, second, and third centuries A.D. to become gradually stronger than all Greco-Roman heroic resistance during the development from Diocletian to the successors of Justinian I. Whether our own 20th century is affected similarly by growing pains of more or less global new civilizations of a, perhaps, somehow non-urban or super-urban character is impossible to state with any certainty without being a prophet. But that the changes which are upon us and have been felt so vividly since 1914 by all of us will not mean the end of civilized life, as one reads so often, but perhaps a pattern of human life in society which will, after much painful and wasteful experimenting, be refined and superior to our present state of civilization is quite imaginable from what happened during the post-Christian centuries of Classical Antiquity.

Let us hope that, by the efforts of future heroic and conservative personalities, what was and is great and eternal in Western traditions, will be preserved in spite of all changes, exactly as the unique heritage of Greece and Rome survived up to the present day because, in its hour of peril, a galaxy of great spiritual and political personalities like Origene, Athanasius, Jerome, Basilius, and Benedict of Nursia, Symmachus, Libanius, and Tribonianus, Diocletian, Constantine the Great, Julianus Apostata, Justinian I., his great empress Theodora, and many other Late Romans of world historic stature, adapted it successfully to the new conditions.

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SUMMARY

This article aims at showing how far it was possible for man, in Greco-Roman antiquity, to change the face of the earth economically and sociologically. In the period from about 1100 to 560 B.C. the chief factors of the newly-discovered technique of working iron and of the Iron Age, developing towards maturity, were intensive mining activity, the clearing of the "heavy" soils in Greece, Italy, and Europe in general for the iron ploughshare and other iron implements, a gradual growth of the population, the Greek "polis-urbanization", extensive city-colonization with the aid of newly-built ships and harbour works, the beginnings of an exchange of domestic animals and cultivated plants in the Mediterranean region,

and, lastly, the coming of the Hellenic monetary economy, whose introduction of coinage revolutionized the behaviour of society in its sociological, political, and economic aspects.

Between approximately 560 and 333 B.C. there were further developments on these foundations. From the frontiers of India as far as Spain, non-Greeks were beginning to imitate Hellenic methods in many fields—and this was particularly so in Rome. The democratic *polis* society, strongly inclined to rational logic, was developed by the Greeks themselves with a further creative intensification of agriculture, with world currencies, trade and traffic, banking, with the *ergasterion* of craftsmen, with mining, technical and natural sciences, and with a system of slavery which, at the present stage, was but rarely destructive of life. Between 333 and 31 B.C. this system of structures of a highly intensive pattern conquered and influenced the world from Britain to India—and at times China too—with many technical, economic and political innovations. However, worldwide hellenization, romanization and urbanization and the permeation of the world by coinage-capitalism misfired.

Biologically the wars of conquest waged by the Roman Republic, and the system of slavery that went with them, were destructive forces which at times led to a decline in the population. On the other hand, the standard of production technique in the non-urbanized agricultural sector of the ancient world began to rise steadily, and so did the standard of culture. From 31 B.C. to 284 A.D. futile attempts were made, by means of all sorts of compromises, technical inventions, and legal measures of a normative kind, to lend permanence to a world organization on a Greco-Roman town basis. Despite these efforts, however, from the time of Hadrian the city colonies lost ground. But that age achieved a lasting structural refinement of the Hellenistic-Roman village culture, which was already beginning to influence non-Roman societies with no existing city culture and their landscapes, and, in the late classical period, endued them with a creative spirit and gave them military superiority over the Roman Empire. Extensive destruction of the agrarian potential of the lands of antiquity is scarcely to be found even in the late classical period.

The late classical period, viewed from inside, presents itself as an experiment of defence surprisingly creative and rich in sociological, legal and technical inventions—which, in the fourth and fifth centuries of the Christian era, by an iron and quasi-total State regimentation, then from the sixth to the eleventh century by an anti-feudal reversion to free peasantry and some individual civic liberties, and, finally, up to 1453, by ill-starred compromises with western feudalism, maintained a heroic struggle to save the cultural empire of Antiquity (dwindling now from continental to island scale, despite occasional powerful counter-blows), the pattern of its landscape and its way of life.

In conclusion, the writer poses the question whether our western civilisation is not already heading for a world situation comparable in its economic and sociological aspects with the post-Hadrian age.

ZUSAMMENFASSUNG

Die Umgestaltung der Landschaft durch den Menschen in der klassischen Antike. Das Anliegen dieses Aufsatzes ist, zu zeigen, wie weit der Mensch der griechisch-römischen Antike seine Landschaft wirtschaftlich und soziologisch umzugestalten imstande war. Von zirka 1100 bis 560 v. Chr. erscheinen als Hauptfaktoren der neuentdeckten Eisentechnik und der reifenden Eisenzeit intensivierte Bergwerksbetätigung, Rodung der «schweren» Böden Griechenlands, Italiens und überhaupt Europas für die eiserne Pflugschar und andere neue Eisengeräte, allmähliche Bevölkerungsvermehrung, die griechische Polisurbanisation, weitausgedehnte Poliskolonisation mit Hilfe neukonstruierter Schiffe und Hafenbauten, beginnender Austausch der Haustiere und Agrarpflanzen des Mittelmeergebietes und schliesslich die das soziologisch-politische und ökonomische Gesellschaftsverhalten revolutionierende hellenische Münzgeldwirtschaft.

Die Zeit von zirka 560 bis 333 v. Chr. baute auf diesen Grundlagen weiter. Von der indischen Grenze bis Spanien begannen bereits Nichtgriechen, hellenische Methoden auf allerlei Gebieten nachzuahmen, vor allem Rom. Die Griechen selber entwickelten die auf rationaler Logik aufbauende demokratische Polisgesellschaft mit weiter schöpferisch intensivierter Landwirtschaft, Weltwährungen, Handel, Bankwesen, Verkehr, Handwerksergasterion, Bergwerkswesen, Technik, Wissenschaft und einem vorläufig noch selten lebenszerstörenden Sklavensystem. Von 333 bis 31 v. Chr. eroberte und beeinflusste dieses Struktursystem in hochintensivierter Form mit vielen technischen, ökonomischen und politischen Neuerungen die Welt von Britannien bis Indien und gelegentlich China. Indessen misslangen Welthellenisierung, Weltromanisierung, Welturbanisierung und münzkapitalistische Durchdringung der Welt.

Die römisch-republikanischen Eroberungskriege und das zugehörige Sklavensystem wirkten sich als biologische Zerstörungsmomente aus und führten zu zeitweiser Bevölkerungsabnahme. Der produktionstechnische und kulturelle Standard im nichturbanisierten Landwirtschaftssektor der antiken Welt begann andererseits unabänderlich anzusteigen. Die Zeit von 31 v. Chr. bis 284 n. Chr. versuchte vergeblich, durch allerlei Kompromisse, technische Neuerfindungen und gesetzlich normativistische Massnahmen eine Welturbanisierung auf griechisch-römischer Grundlage permanent zu machen. Seit Hadrian gingen die Stadtsiedlungen nichtsdestoweniger zurück. Erreicht wurde aber eine strukturelle Dauerverfeinerung der hellenistisch-römischen Dorfkultur, die bereits jetzt die nichtrömischen Gesellschaften ohne bisherige Stadtkultur und ihre Landschaften zu beeinflussen begann und sie in der Spätantike neuschöpferisch und der Antike militärisch überlegen machte. Weitreichende Zerstörung des Agrarpotentials antiker Landschaften ist selbst in der Spätantike so gut wie nicht nachzuweisen.

Die Spätantike, von innen gesehen, stellt sich als ein überraschend schöpferisches, soziologisch, juristisch und technisch erfinderisches Altersexperiment dar, welches im vierten und fünften Jahrhundert n. Chr. durch eiserne und fast totale Staatsreglementierung, vom sechsten bis zum elften Jahrhundert durch eine antifeudale Rückkehr zum Freibauerntum und einigen Bürgerfreiheiten, und schliess-

lich bis 1453 n. Chr. durch unheilvolle Kompromisse mit dem abendländischen Feudalismus das von kontinentalen zu inselhaften Ausmassen trotz gelegentlicher machtvoller Rückstösse zusammenschrumpfende antike Kulturgebiet, seine Landschaftsgestaltung und Lebensweise heroisch zu retten suchte.

Zum Schluss wirft der Verfasser die Frage auf, ob unsere abendländische Zivilisation nicht bereits einer der Zeit nach Hadrian vergleichbaren ökonomischen und soziologischen Weltsituation entgegensteuert.

RÉSUMÉ

Le rôle de l'homme dans la transformation de l'aspect de la terre dans l'Antiquité classique. L'objet de cet article est d'exposer dans quelle mesure l'homme de l'Antiquité gréco-romaine a été en mesure de transformer économiquement et sociologiquement la face du monde. De l'année 1100 environ à 560 avant J.-C. sont apparus, comme principaux facteurs de la technique nouvelle du fer et de l'âge du fer en pleine évolution: l'exploitation intense des mines; le défrichement du sol «lourd» de la Grèce, de l'Italie et de l'Europe en général pour utiliser la charrue au soc de fer et d'autres nouveaux outils aratoires en métal; l'accroissement progressif de la population; l'urbanisation de la *polis* grecque; l'établissement lointain de *poleis*, grâce aux bateaux nouvellement construits et à l'édification de ports; le début des échanges d'animaux domestiques et de plantes cultivées des régions méditerranéennes; enfin le système hellénique de monnaie métallique révolutionnant les rapports sociaux, politiques et économiques.

L'évolution qui s'ensuivit, de 560 environ à 333 avant J.-C., est partie de ces bases. Des frontières de l'Inde à l'Espagne, les peuples non grecs, Rome surtout, commencèrent à imiter les méthodes helléniques dans toutes sortes de domaines. Les Grecs eux-mêmes développèrent dans le cadre des *poleis* une société démocratique, fondée sur la logique, avec une agriculture continuant d'innover, des monnaies mondiales, un commerce, des banques, un trafic, un *ergasterion* artisanal, des mines, une technique, les sciences et un régime d'esclavage ne supprimant encore que rarement la vie humaine. De 333 à 31 avant J.-C., ce système fortement développé conquit et influença le monde, avec nombre d'innovations techniques, économiques et politiques, de la Grande-Bretagne aux Indes et occasionnellement la Chine. Ont cependant échoué l'hellénisation, la romanisation et l'urbanisation du monde ainsi que l'instauration pour le monde d'une monnaie «capitalistique».

Les guerres de conquêtes de la République romaine et le système d'esclavage qui les accompagna agirent comme des facteurs biologiques destructeurs et provoquèrent à certaines périodes une diminution de la population. Le niveau technique (relatif à la production) et culturel commença d'autre part à s'élever irrésistiblement dans le secteur agricole du monde antique. La période allant de 31 avant J.-C. à 284 après J.-C. a vainement essayé de rendre permanente – par toutes sortes de compromis, des innovations techniques et des mesures normatives légales – une urbanisation du monde sur des bases gréco-romaines. Depuis Adrien, la popu-

lation des villes n'en diminua pas moins. Mais ce qui fut réalisé, c'est un affinement «structurel» durable de la civilisation rurale gréco-romaine qui commençait déjà à influencer les populations non romaines, jusqu'alors sans civilisation urbaine, ainsi que leur paysage, et qui les rendit inventives dans la phase finale de l'Antiquité et supérieures à l'Antiquité elle-même sur le plan militaire. Il est démontré que même dans la période finale de l'Antiquité, il n'y a eu pour ainsi dire aucune destruction importante du potentiel agricole des terres.

Considérée de l'intérieur, la phase finale de l'Antiquité apparaît comme une période étonnamment créatrice, fertile en inventions dans les domaines sociologique, juridique et technique. Cette période a héroiquement cherché à sauver la civilisation de l'Antiquité, la configuration de ses terres et sa manière de vivre – civilisation dont le champ allait se rétrécissant de l'échelle continentale à des proportions insulaires, malgré de puissants retours en arrière occasionnels – et ceci au quatrième et cinquième siècle après J.-C. par une réglementation draconienne et presque totale de l'Etat, du sixième ou onzième siècle par un retour antiféodal à une paysannerie libre et quelques libertés aux citadins et enfin jusqu'en 1453 après J.-C. par des compromis désastreux avec le féodalisme occidental.

Enfin, l'auteur se demande si notre civilisation occidentale ne conduit pas au devant d'une situation mondiale comparable sur le plan économique et sociologique à celle de l'époque d'après Adrien.

NATIONAL INCOME, CAPITAL FORMATION AND NATURAL RESOURCES

In the following article an attempt is made to show:

(a) that natural resources are of increasing importance in a modern economy;
(b) that prevailing economic theory disregards natural resources as an independent factor;
(c) that the definitions used in national-income and similar statistics are based on prevailing economic theory and, therefore, exclude natural resources from such calculations;
(d) that the resulting figures sharply distort real conditions.

In conclusion, a new method of calculating capital formation is suggested.

For reasons of clarity and brevity and because of their widely accepted authority, Keynes' definitions have been used for the prevailing economic theory and the definitions of the Statistical Office of the United Nations for national income and capital formation.

1. The Importance of Natural Resources

Whereas in a primitive society natural resources, apart from land, play only a minor role, they perform an increasingly important part in the modern industrial society. Energy, which in the primitive society is supplied mainly by human and animal labour, is derived in the industrial society from coal, petroleum, natural gas and hydropower, to which in the near future uranium and thorium will be added. The brief list of metals known to a primitive society, and produced and consumed in small quantities, has grown, and is steadily growing, from aluminium (only about 50 years old) to the rare metals required in the atomic energy industry. A similarly expanding list of natural resources used in the chemical industries, of clays and other materials for the building and ceramic industries, etc., could be compiled.

In addition to the lengthening list of resources employed, the quantities consumed are increasing rapidly. For example, the United

States has now become a net importer of petroleum and iron ore. The value of minerals produced annually in the U.S.A. (excluding, of course, water, water power and all other non-mineral resources) considerably exceeds the yearly total of U.S.A. commodity exports. In other words, if the U.S.A. had no mineral resources it would have to expand its exports to more than three times the present volume in order to pay for the minerals which, in such an event, would have to be imported.

An even more important role is played by natural resources in under-developed countries. Some of them, such as the oil-exporting countries, live on their income from petroleum. In all of the under-developed countries it is the availability of raw materials and natural resources which largely determines the direction and extent of their industrialization. Countries without iron and coke, for instance, dare not build up a steel industry. Finally, natural resources take first place in international trade, with petroleum as leading commodity, followed by other minerals.

The importance of natural resources in the modern economy has been treated in some detail here because modern economic theory and statistics still overlook such gifts of nature or take them for granted.

2. *The Labour-Capital Approach*

From Ricardo to Keynes almost all economists have recognized as independent economic factors only capital and labour[1]. "It is my belief that much unnecessary perplexity can be avoided if we limit ourselves strictly to the two units, money and labour, when we are dealing with the behaviour of the economic system as a whole"[2]. The following lengthy quotation contains another clear statement of Keynes' basic belief:

"I sympathise, therefore, with the pre-classical doctrine that everything is *produced* by *labour*, aided by what used to be called art and is now called technique, by natural resources which are free or cost a rent according to their scarcity or abundance, and by the results of past labour, embodied in assets, which also

1. Ricardo and other economists also spoke of "land" as an independent economic factor, but its importance in economic theory rapidly declined.

2. J. M. KEYNES, *The General Theory of Employment, Interest and Money*, London 1954, p. 43.

command a price according to their scarcity or abundance. It is preferable to regard labour, including, of course, the personal services of the entrepreneur and his assistants, as the sole factor of production, operating in a given environment of technique, natural resources, capital equipment and effective demand. This partly explains why we have been able to take the unit of labour as the sole physical unit which we require in our economic system, apart from units of money and of time»[3].

It is not necessary at this stage to criticize this "labour" theory; the passage has been quoted solely in order to point out the basic approach. This "labour" theory has determined also Keynes' definition of investment, output, income and saving:

"Provided it is agreed that income is equal to the value of current output, that current investment is equal to the value of that part of current output which is not consumed, and that saving is equal to the excess of income over consumption—all of which is conformable both to common sense and to the traditional usage of the great majority of economists—the equality of saving and investment necessarily follows. In short—

Income = value of output = consumption + investment.
Saving = income — consumption.
Therefore saving = investment"[4].

In all these definitions, the "labour" theory is basic, i.e. only goods which are man-made or raised or planted are included. Thus, for instance, the definition of "investment" does not include the value of a discovered oil field or gold mine.

Consequently, these terms measure only the share of human labour in the growth of capital. Keynes states: "But no one can save without acquiring an asset which he did not previously possess, unless *either* an asset of equal value is newly produced *or* someone else parts with an asset of that value which he previously had"[5].

This labour and employment approach is also extended to the national income. Keynes writes: "Our present object is to discover what determines at any time the national income of a given economic system and (which is almost the same thing) the amount of its employment"[6].

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3. *Op. cit.*, p. 213–214.

4. *Op. cit.*, p. 63.

5. *Op. cit.*, p. 81. This is, of course, incorrect: if one discovers a valuable natural resource, one acquires an asset neither newly produced nor belonging to someone else.

6. *Op. cit.*, p. 247.

3. Definition of National Income and its Theoretical Basis

The statistics of national income and capital formation are all based with minor variations, on the same concepts as have been quoted from Keynes. Similar concepts result from the definitions given in the publications of the Statistical Office of the United Nations. In one of these publications national income is defined as follows: "National income equals consumption expenditure plus net domestic capital formation plus surplus of the nation on current account less direct taxes net of subsidies"[7]. This definition broadly conforms to Keynes' definition; the only difference is the use of the term "capital formation" for investment[8]. The same applies to the Keynes formula savings = investment, which is expressed in the United Nations publication as follows: "For the nation as a whole total saving will be equal to the sum of net domestic capital formation and the surplus of the nation on current account with the rest of the world"[9].

The purpose of these quotations is to show that the standard definitions of the United Nations broadly correspond to the terms used by Keynes and consequently rest on the same narrow "labour-capital" theory.

4. The Treatment of Natural Resources in National Income

The United Nations standard definitions rigorously, clearly and consistently exclude natural resources. Thus, natural resources discovered are included in "capital formation" only if, and in so far as, capital and labour were invested in such discovery. Equally, no depletion or other allowance is provided for the eating-up or destruction of natural resources:

"Charges made for the depletion of exhaustible natural resources are not included in the provisions for the consumption of fixed capital. The only items

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7. *A System of National Accounts and Supporting Tables*, United Nations, Studies in Methods, No. 2, 1953, p. 17.

8. Actually, the meaning is the same and the use of the term "capital formation" is explained as follows: "Since different meanings have been attached to the term *investment*, its use has been avoided in this report". *Concepts and Definitions of Capital Formation*, United Nations, Statistical Papers, Series F, No. 3, July 1953, p. 7.

9. *A System of National Accounts and Supporting Tables*, p. 37.

with respect to these resources which enter capital formation are the construction and equipment used in making them available. Provisions for the consumption of these items should be made according to the rules just given, but further provision for the consumption of the irreplaceable resources themselves should not be made in national accounting"[10].

Nor are discoveries of natural resources counted as additions to "stocks". "Changes in farm stocks such as grain and livestock are included in this flow, while increases in natural resources due to growth, as in the case of forests and standing crops, and to new discoveries, as in the case of mineral deposits, are excluded from capital formation"[11].

The United Nations statistical reports throw little light on the reasons for the exclusion of natural resources, the following two quotations containing the only relevant indications in the reports, apart from general statements on production in the spirit of Keynes.

"*Depletion allowances* which represent the exhaustion of natural resources should be excluded from the provisions for capital consumption in national accounting on the ground that the discovery of sub-surface mineral deposits and other natural resources is excluded from the definition of capital formation as recommended in this report"[12].

It is logical to exclude depletion allowances if the value of natural resources is also excluded. But why are newly discovered natural resources excluded from capital formation?

"Inventories of museums, works of art and other collectors' items are not regarded as capital goods. Neither should the discovery of sub-soil resources such as petroleum or minerals be included in capital formation as defined in this report. In both cases the problems of valuation are very difficult. The value of sub-soil resources generally does not bear a close relationship to the cost of discovery. While estimation of the latter appears possible, it is recommended that only those expenditures which involve the creation of structures such as the drilling of wells or the digging of mine shafts be included in capital formation. Although the inclusion of such expenditures may not and generally will not provide for including in capital formation the full value of the resources exploited, the extraction of these resources is considered as a charge to current output. Inclusion of depletion

10. *Ibid.*, p. 7.
11. *Ibid.*, p. 30.
12. *Concepts and Definitions of Capital Formation*, p. 15.

allowances as a form of capital consumption in business accounting is based on the view that such resources represent non-reproducible national assets not entirely dissimilar to stocks of raw materials"[13].

This paragraph appears to adduce two reasons for the exclusion of natural resources, namely (a) that the valuation is "very difficult" (this point will be discussed later) and (b) [by implication] that the value of the discovery, in so far as it exceeds the value of the mine works, will be included under current income. The operative sentence is: "Although the inclusion of such expenditures may not and generally will not provide for including in capital formation the full value of the resources exploited, the extraction of these resources is considered as a charge to current output". If this sentence has been rightly interpreted above, as meaning that the full value of the mineral (less depreciation of mine works) will be later included under current income, then, logically, depletion allowances should be introduced as a charge to current output. But, as shown by the earlier quotation, depletion allowances have expressly been excluded from national income, stocks and capital formation. If the text, then, admits that the value of a mineral discovery exceeds the cost of discovery and mine structures, and if, by definition, cost of extraction does not include depletion, then statistics of national income, which evaluate the annual output of, say, petroleum, by adding depreciation of mine structures and extraction cost, must fail to include the main part of the crude oil value. Yet this is such a considerable source of annual income that all statistics so calculated must seriously understate the real national income. If the operative sentence has a different meaning, then the sentence is unclear[14].

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13. *Ibid.*, p. 8.

14. The official United States text and studies are somewhat clearer on this point. "With respect to depletion charges, no deduction is made for them in computing net incomes. The value of new discoveries of natural resources is not counted as part of capital formation or of profits, and consequently deduction of a capital consumption charge for impairment of the stock of natural resources would be inappropriate". *National Income 1954 Edition*, A Supplement to the *Survey of Current Business*, United States Department of Commerce, Washington 1954, p. 41. This text makes it clear that natural resource discoveries are also excluded from profit calculations.

5. Some Results of the Present Practice

The exclusion of natural resources from statistics of national income and capital formation often leads to strange results. Let us again take petroleum. In 1953, 49,053 wells were drilled for petroleum in the U.S.A. In all, by this drilling the proved reserves of petroleum in the U.S.A. increased by 3,296 million barrels. In the Middle East, however, during the same year, only 92 wells were drilled but proved reserves increased by 18,615 million barrels, or about five times the U.S. quantity. Common sense and business practice regard the petroleum reserves proved by such drilling as capital formation, whereas the cost of "dry holes" is treated as a capital loss. Not so the statistics of national income; according to the principles set forth in the preceding sections, the cost of drilling would be classified as outlay on capital formation—with the paradoxical result that the Middle East, because of its small number of drillings, would show only a very slight rise in capital formation, whereas in the U.S.A. the corresponding figures would run into billions of dollars.

Limitations of space do not allow the discussion of other examples of the actual treatment of natural resources in national income statistics and their strange "economic" meanings.

There are, however, two aspects of the present statistical practice which require comment. The first relates to the absence of depletion allowances. In the case of the oil and other mineral exporting countries this is bound to result in a considerable overstatement of the annual "disposable" income—creating the belief in the mind of politicians and the public that all income from mineral exploitation can be spent on consumption. In reality, such countries are mostly eating up one of the few capital assets they possess. Secondly, natural resources because of the way in which they are treated in national income studies, mining is relegated to a minor role in most economic studies and important income and other money flows are left unobversed[15].

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15. In the United States, for instance, the "Net Domestic Product" of $307 thousand million, shows "mining" only with $6 thousand million or about 2% (*Statistics of National Income and Expenditure*, United Nations, Statistical Papers, Series H, No. 6, August 1954, p. 46). In the same year, as already mentioned,

6. A Suggestion for a Change of Method

"Ricardo offers us the supreme intellectual achievement, unattainable by weaker spirits, of adopting a hypothetical world remote from experience as though it were the world of experience and then living in it consistently. With most of his successors common sense cannot help breaking in—with injury to their logical consistency"[16].

Keynes' criticism of Ricardo is equally applicable to Keynes and his followers, especially in the field of national income studies. The system employed is logical but it is based on a hypothetical world, "remote from experience" and reality.

The first step towards a closer approximation to reality in economic theory, and in particular in national income studies, is the recognition that there are values which are created and others which are discovered. Such an admission would necessarily lead to the conclusion that capital formation must be calculated independently of national income. True, this suggestion would destroy the imposing unity of structure in the present national income systems; but it would reward us with better knowledge of our modern economy. Capital formation would then include all new resource discoveries plus man-made capital.

Such a "capital formation" estimate would be more realistic and more reliable than present computations, because it would include values recognized by all except economists and statisticians. As regards reliability, it would replace outlay devoted to the search for natural resources—which of necessity and by caprice of nature is speculative and partly lost—by the value of actual discoveries.

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newly proved petroleum reserves alone amounted to 3,296 million barrels, with an approximate capital value of $6 thousand million. This is independent of the petroleum production during 1953, which was close to the same quantity. In other words, during 1953 capital assets were created by the proving of new petroleum reserves and (as such new reserves are usually exploited years later), in addition, a stream of income was created by the petroleum production. It is obvious that new values created by discoveries of natural resources are economic realities. These proved reserves are traded, appear in balance sheets and are, for businessmen, assets like any other. Such discoveries improve the credit of a company and lead to income and money flows of considerable dimensions.

16. J. M. KEYNES, *op. cit.*, p. 192.

Moreover, most gifts of nature and certainly all minerals have international standard prices, and consequently the valuation of such discoveries is much easier than that of most other capital assets.

In the past century when minerals played a minor role, economic theory, especially in a mineral-poor country like England, could afford to neglect the capital contribution of nature without straying too far from reality. But this is no longer possible. Economic reality also changes. Keynes pointed out that Jevons' explanation of the trade cycle as due to agricultural fluctuations was correct "at the time when Jevons wrote—and more particularly over the period to which most of his statistics applied"[17].

The time has come, I believe, to take stock of our present reality *and* to frame our theories and statistics accordingly.

New York JOSEPH BARNEA*

SUMMARY

The article begins by stressing the importance of natural resources in the modern industrial society. Coal, petroleum, natural gas and hydro-power are basic in the provision of the tremendous amounts of energy utilized. The number of different metals, clays and other natural resources now employed in industry is very great, and the quantities of these consumed annually are immense. The role of natural resources is equally important in industrialized and in under-developed countries.

There follows a discussion of the treatment of natural resources in modern economic theory, as represented by Keynes. It is noted that Keynes recognized only two factors of production, namely, capital and labour. Keynes' treatment of investment, output, income and savings excludes natural resources. In his theory and in the theory of other economists, the "labour theory of value" is basic, *i.e.*, value is assigned only to man-made goods and agricultural products. The definition of investment, for instance, does not include the value of a discovered oil field or gold mine.

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17. *Ibid.*, p. 329.

* The author is a member of the United Nations Secretariat, but the views expressed in this article are his personal opinions.

It is noted that the concepts at present employed in national-income analysis and statistics closely approximate to those of Keynes; for example, the formula that savings equal investments is used. The standard definitions applied leave out all natural resources; these are excluded from "capital formation" and "stocks".

The writer then discusses the validity of some of the reasons given for the exclusion of the value of natural resources. Attention is drawn to the grossly misleading results which this omission may have in respect of capital formation.

In conclusion, a suggestion is made for a change in economic theory and national-income analysis, in order to bring these into closer correspondence with present realities: value should be attributed not only to man-made goods but also to natural resources discovered. As a corollary, capital formation would have to be calculated independently of national income. While this method would destroy the imposing unity of structure of present national-income accounting systems, it would lead to a better knowledge of the modern economy and would be more realistic and reliable.

ZUSAMMENFASSUNG

Volkseinkommen, Kapitalbildung und natürliche Ressourcen. Der Autor betont einleitend die Wichtigkeit der natürlichen Ressourcen in der modernen Industriewirtschaft. Kohle, Petroleum, Naturgas und Wasserkraft sind von grundlegender Bedeutung für die Bereitstellung der benötigten enormen Energiemengen. Heute werden in der Industrie zahlreiche verschiedene Metalle, Tonsorten und andere natürliche Ressourcen verwendet und jährlich riesige Quantitäten verbraucht. In industrialisierten wie in unterentwickelten Ländern sind die natürlichen Ressourcen von gleicher Bedeutung.

Es folgt sodann eine Erörterung über den Platz, den die moderne ökonomische Theorie den natürlichen Ressourcen einräumt. Keynes anerkennt nur zwei Produktionsfaktoren, nämlich Kapital und Arbeit; seine Behandlung von Investition, Produktion, Einkommen und Ersparnis schliesst die natürlichen Ressourcen aus. Die Theorie von Keynes und anderer Ökonomen basiert auf der «Arbeitswerttheorie», das heisst, nur mit Hilfe von Arbeit produzierten Gütern und landwirtschaftlichen Erzeugnissen wird ein Wert zuerkannt. Zum Beispiel schliesst die Definition der Investition den Wert eines entdeckten Ölfeldes oder einer neuen Goldmine nicht ein.

Die in der Volkseinkommensanalyse und -statistik gegenwärtig verwendeten Konzepte kommen jenen von Keynes sehr nahe; so wird zum Beispiel die Formel gebraucht, dass die Ersparnis gleich der Investition ist. Die gebräuchlichen Standarddefinitionen lassen die natürlichen Ressourcen unberücksichtigt, sowohl in bezug auf «Kapitalbildung» wie auf «Vorräte».

Der Autor erörtert alsdann die Triftigkeit der Gründe, die für den Ausschluss des Wertes der natürlichen Ressourcen ins Feld geführt werden. Er weist auf die sehr irreführenden Ergebnisse hin, welche diese Auslassung mit Bezug auf die Kapitalbildung zur Folge haben kann.

Abschliessend wird die folgende Anregung für eine Modifizierung der Theorie und der Volkseinkommensanalyse gemacht, um beide stärker der Wirklichkeit anzunähern: Es sollte nicht nur den mit Hilfe von Arbeit produzierten Gütern Wert beigemessen werden, sondern auch den entdeckten natürlichen Ressourcen. Das hätte zur Folge, dass die Kapitalbildung unabhängig vom Volkseinkommen errechnet werden müsste. Wenn auch dadurch die imponierende strukturelle Einheit des heutigen Systems der Volkseinkommensrechnung zerstört würde, so würde diese Methode anderseits zu einer besseren Kenntnis der modernen Wirtschaft führen, und sie wäre realistischer und verlässlicher.

RÉSUMÉ

Revenu national, formation des capitaux et ressources naturelles. L'auteur commence par souligner l'importance des ressources naturelles dans l'économie industrielle moderne. Le charbon, le pétrole, le gaz naturel et la force hydraulique sont d'une nécessité fondamentale pour fournir les quantités d'énergie utilisées. Le nombre des différents métaux, argiles et autres ressources naturelles employés aujourd'hui dans l'industrie est très grand et cette dernière en fait annuellement une énorme consommation. Le rôle des ressources naturelles a la même importance dans les pays industrialisés et dans les pays sous-développés.

Puis l'article contient une discussion sur la place qu'occupent les ressources naturelles dans la théorie économique moderne. Keynes ne reconnaît que deux facteurs de production, à savoir le capital et le travail; en traitant des investissements, de la production, des revenus et de l'épargne, il exclut les ressources naturelles. La théorie de Keynes et d'autres économistes est fondée sur la théorie de la valeur-travail, c'est-à-dire qu'une valeur est conférée seulement aux biens fabriqués par l'homme et aux produits agricoles. Par exemple, la définition de l'investissement ne comprend pas la valeur d'un champ pétrolifère ou d'une mine d'or nouvellement découverte.

Les concepts actuellement utilisés dans l'analyse et les statistiques du revenu national sont très proches de ceux de Keynes. Par exemple, on emploie la formule selon laquelle l'épargne égale les investissements. Les définitions standard appliquées notamment en ce qui concerne la «formation des capitaux» et les «stocks» laissent de côté toutes les ressources naturelles.

L'auteur discute ensuite le bien-fondé de quelques-unes des raisons invoquées pour exclure la valeur des ressources naturelles et indique les résultats tout à fait trompeurs que cette omission peut avoir en ce qui concerne la formation des capitaux.

En conclusion, il fait la suggestion suivante pour modifier la théorie et l'analyse du revenu national afin de les rapprocher toutes deux de la réalité: une valeur devrait être attribuée non seulement aux biens produits par le travail, mais aussi aux ressources naturelles découvertes. Cela aurait pour conséquence que la formation des capitaux devrait être calculée indépendamment du revenu national. Lors même que cette méthode détruirait l'imposante unité de structure du système actuel de comptabilité nationale, elle conduirait d'autre part à une meilleure connaissance de l'économie moderne et serait plus près de la réalité et plus sûre.

A NOTE ON THE MONEY INCOME EFFECTS OF DEVALUATION*

While income effects of devaluation have been noted several times in various types of models, the typical analysis of the effect of devaluation on a country's balance of payments has been concerned solely with the direct price effects[1]. A summary of such conventional analysis was recently presented in this journal by the present writer[2]. This note expands that summary in a simple manner to include effects of devaluation on the balance of payments via changes in national money income.

I

The direct price effects of devaluating the pound from, say, $\$5 = £1$ to $\$4 = £1$ can be stated in terms of either dollars or pounds. In figures 1a and 1b, we measure in terms of dollar prices; figures 1c and 1d measure in pound prices. With the pound devaluation, in the dollar-price diagrams the U.K. curves fall twenty per cent by construction; in the pound-price diagrams the U.S. curves rise by twenty-five per cent. With normally sloping supply and demand

* Among others, N. V. Breckner, K. Brunner, and W. Y. Oi have been especially helpful in the preparation of this note.

1. "The required extension of the treatment [of effects of devaluation on the balance of payments] lies in taking adequate account of the balance-of-payments effects of income expansion.... We have to use a multiplier analysis on top of the elasticity analysis". – J. J. POLAK, "Discussion", *American Economic Review, Proceedings*, XLII (May 1952), p. 180. See also A. C. HARBERGER, "Currency Depreciation, Income, and the Balance of Trade", *Journal of Political Economy*, LVIII (February 1950), p. 47–60; S. LAURSEN and L. A. METZLER, "Flexible Exchange Rates and the Theory of Employment", *Review of Economics and Statistics*, XXXII (November 1950), p. 281–299; J. E. MEADE, *The Balance of Payments*, New York 1951, esp. p. 166–170; G. STUVEL, *The Exchange Stability Problem*, New York 1951; S. S. ALEXANDER, "Effects of a Devaluation on a Trade Balance", *International Monetary Fund Staff Papers*, II (April 1952), p. 263–278; F. MACHLUP, "Relative Prices and Aggregate Spending in the Analysis of Devaluation", *American Economic Review*, XLV (June 1955), p. 255–278; E. V. MORGAN, "The Theory of Flexible Exchange Rates", *ibid.*, esp. p. 286/287, 290–295.

2. "Stable and Unstable Equilibria in the Foreign Exchanges", *Kyklos*, VII (1954), Fasc. 4, p. 395–410.

curves, devaluation obviously increases the quantity of U.K. exports and decreases import volume. But the U.K. balance of payments position may be improved, worsened, or left unchanged: the dollar value of U.K. imports falls, and the pound value of her exports rises, but what happens to the dollar value of exports and the pound value of imports is determined in the first instance by elasticities.

Stability conditions, i.e., conditions for a devaluation to improve the U.K. balance of payments position, can be stated in terms of elasticities. Let ε_1 be the elasticity of U.K. demand, η_2 the elasticity of U.S. supply, η_1 the elasticity of U.K. supply, and ε_2 the elasticity of U.S. demand. We have a stable situation if $\varepsilon_1 + \varepsilon_2 > 1$, ignoring signs, in the limiting case where η_1 and η_2 are infinite; or if $\eta_1 = \eta_2 = 0$, irrespective of the values of ε_1 and ε_2.[3] Thus there can be a stable case even with small demand elasticities, i.e., a sum of less than one, if the supply elasticities are sufficiently small.

Note that in figure 1a we are dealing with dollar-demand, from the U.K. point of view, and in figure 1b we are concerned with dollar-supply; similarly, in figure 1c, pound-supply, and in figure 1d, pound-demand. With reference to figures 1a and 1b, and assuming that originally the quantity of dollars supplied equals the quantity demanded, we may define the elasticity of the U.K. balance of payments with respect to dollars ($E_{bp\$}$) as the proportionate net change in dollar receipts as a result of a proportionate change in the exchange rate.

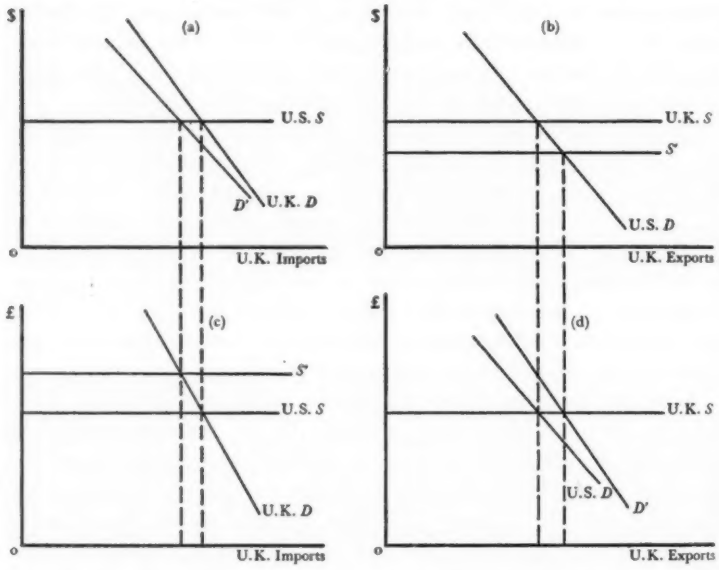
$$E_{bp\$} = \frac{\Delta(\$_s - \$_d)/\$}{\Delta(£/\$)/(£/\$)} = \frac{\varepsilon_1\varepsilon_2(\eta_1+\eta_2+1)+\eta_1\eta_2(\varepsilon_2+\varepsilon_1-1)}{(\eta_1+\varepsilon_2)(\eta_2+\varepsilon_1)}.^4$$

It will be observed further that figure 1d, pound-demand, is analogous to figure 1a, dollar-demand; in both cases, the demand curves are altered, although in opposite directions. Also, the two "supply"

3. The latter statement—which is condition (4) in my earlier article (p. 403)—is not the only statement of stability conditions in terms of supply elasticities alone. It is sufficient that $\eta_1 = 0$, irrespective of the values of η_2, ε_1, and ε_2. However, it is not sufficient that $\eta_2 = 0$; in this case, it must be specified further that $\varepsilon_2 > 0$. I am indebted to correspondence with J. Niehans on this point Unfortunately, an error was made in stating condition (5) (p. 403): the signs on the left side should be reversed. Thus: $\eta_2\eta_1(\varepsilon_2+\varepsilon_1-1) > \varepsilon_1\varepsilon_2(1+\eta_1+\eta_2)$.

4. *Ibid.*, p. 403/404.

Figure 1

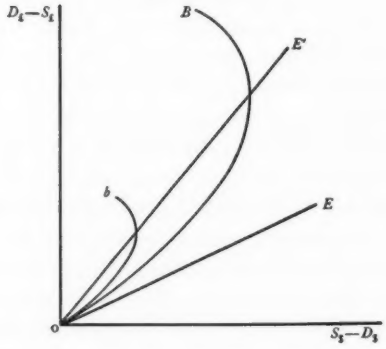


diagrams, figures 1b and 1c, correspond. It is not surprising that the elasticity of the U.K. balance of payments in terms of pounds ($E_{bp£}$) can be written precisely the same as the formula for $E_{bp\$}$—except that the subscripts must be reversed, e.g., ε_1 is here the elasticity of U.S. demand. That is, starting from an original zero (current account) balance, a (small) proportionate change in the exchange rate, K, will result in a proportionate change in the balance of payments position in pound terms equal to $K \cdot E_{bp£}$.

The elasticity of the U.K. balance of payments in both dollar and pound terms may be illustrated in figure 2.[5] (We shall deal here only with devaluation and the stable case.) Reading to the right from the origin, we measure the excess of dollars supplied over dollars demanded; vertically, the excess of pounds demanded over pounds supplied. The exchange rate is indicated by the tangent (or co-

5. *Ibid.*, p. 405.

Figure 2



tangent) of the angle formed by *OE* and the horizontal axis. In this figure, tracing *OB* as *OE* pivots at the origin through increasing angles, e.g., to *OE'*, representing higher pound prices of the dollar, there is an excess of dollars supplied which first increases and then decreases; also, there is an excess of pounds demanded which grows ever larger[6].

With a backward-bending *OB*, as in the figure, an "optimum" devaluation from the initial *OE* would be to *OE'*, where the excess of dollars supplied is greatest[7].

II

The excess of pounds demanded (by U.K. exporters who wish to convert acquired foreign currency into domestic) over pounds sup-

6. While this is a reasonable shape of *OB*, it may be somewhat different in other cases. For example, it might have a positive slope throughout its length, or it might bend not only backward but down, thus having two segments with positive slopes. But in any case, starting with a zero balance and stopping short of an infinite pound price of the dollar (vertical *OE*), devaluation of the pound will result in an excess of dollars supplied and of pounds demanded.

7. Note that if we assume *OE'* to be the initial exchange rate, further devaluation has the result of worsening the balance of payments in one currency (dollars) and improving it in the other (pounds).

plied (by U.K. importers in purchasing foreign exchange) represents an "injection" which will have multiplied repercussions on U.K. income—in the absence of government compensatory policies[8].

Following Machlup, it is not difficult to derive a formula for the new equilibrium income of the devaluating country (Y_a).[9] Subscripts a and b denote the U.K. and the U.S., respectively; c, s, and m represent the marginal propensities to consume, to save, and to import; and ΔX and ΔM are the autonomous changes in U.K. export and import values resulting directly from the devaluation. It is assumed that income is determined by (output is produced for) the components of consumption, investment, and exports ($Y = C + I + X$), and income is disposed of in the form of consumption, saving, and imports ($Y = C + S + M$). Thus $\Delta Y = \Delta C + \Delta S + \Delta M$, and $1 = c + s + m$.[10]

In the Machlup-type model, the marginal propensity to invest is assumed constant at a value of zero. Thus the only "injections" are autonomous and induced exports; "leakages" are autonomous and induced imports and induced saving. For either country, then, $\Delta S = aut\ \Delta X + ind\ \Delta X - aut\ \Delta M - ind\ \Delta M = net\ \Delta(X - M)$, and the net trade balance, with opposite signs, is the same for both countries in this two-country model. Since the trade balances are arithmetically equal, the same is true of the induced changes in saving:

8. We may identify the trade balance with the injection with the aid of an assumption employed by F. MACHLUP (*International Trade and the National Income Multiplier*, Philadelphia 1943). Changes in income are determined by changes in expenditure on domestic output, but changes in imports represent changes in expenditure on foreign output. For import changes to be a determinant of domestic income, they must be the counterpart of a change in some component of domestic income, *i.e.*, consumption, investment, or exports. It is assumed here that the *propensity to spend on consumption plus imports* is constant, so that an autonomous increase in import expenditure is accompanied by an equivalent decrease in consumption expenditure.

9. *Ibid.*, p. 78/79.

10. While this is a common form used by economists, in national income accounting, *e.g.*, by the United States Department of Commerce, "sources" of national income include *net* exports, and thus $Y = C + I + (X - M)$; also $Y = C + S$ and $1 = c + s$, and imports are not considered a separate disposition of income as are consumption and saving. More specifically, Department of Commerce figures for C, I, and X are "gross" inclusive of imports, and then M must be explicitly subtracted.

$$s_a \Delta Y_a = -s_b \Delta Y_b,$$

$$\Delta Y_b = -\frac{s_a}{s_b} \Delta Y_a.$$

By definition[11]:

$$\Delta Y_a = \Delta X - \Delta M + c_a \Delta Y_a + m_b \Delta Y_b$$

$$= \Delta X - \Delta M + c_a \Delta Y_a - m_b \frac{s_a}{s_b} \Delta Y_a,$$

$$\Delta X - \Delta M = \Delta Y_a - c_a \Delta Y_a + m_b \frac{s_a}{s_b} \Delta Y_a$$

$$= \Delta Y_a \left(1 - c_a + m_b \frac{s_a}{s_b}\right),$$

$$\Delta Y_a = \frac{\Delta X - \Delta M}{1 - c_a + m_b s_a/s_b}$$

$$= \frac{\Delta X - \Delta M}{s_a + m_a + m_b s_a/s_b}.$$

And the multiplier is:

$$k = \frac{1}{s_a + m_a + m_b s_a/s_b}.$$

For illustration, assume the following propensities for the two countries:

Country A: $c = .4$; $s = .3$; $m = .3$
Country B: $c = .7$; $s = .2$; $m = .1$

Further, assume that devaluation of A's currency (pounds) results in an autonomous increase in the value of A's exports of 1.0 and an autonomous decrease in imports of 2.0, measured in A's currency, giving an initial positive trade balance of 3.0. (From figure 1c and 1d, it is apparent that the pound value of exports must rise, and the

11. As observed in note 8, above, this expression, which includes ΔM, is not strictly accurate. With a zero marginal propensity to invest, changes in income are determined by changes in exports ($\Delta X + m_b \Delta Y_b$) plus changes in consumption—and it is assumed that the autonomous change in consumption equals the autonomous change in imports. Thus, if the consumption function is $C = c_0 + c_1 Y$, the parameter c_0 is autonomously reduced by the devaluation, and then $\Delta Y_a = \Delta X - \Delta c_{0a} + c_{1a} \Delta Y_a + m_b \Delta Y_b$. Mathematical nicety is sacrificed here in the interest of convenience and conventionality among economists—although, as indicated below, such lack of precision sometimes leads economists astray.

value of imports may rise, fall, or remain constant.) For B, therefore, there is an initial negative balance of the same magnitude.

The assumed propensities give Country A a multiplier of $1\frac{1}{3}$ and Country B a multiplier of 2. With multiplicands of 3, the new equilibrium income of A will show an increase of 4; the income of B falls by 6. Table 1 illustrates the paths of expansion and of contraction for several periods plus the final equilibrium values. Using Machlup's assumption of a constant propensity to spend on consumption plus imports, for both countries in period 1 consumption falls (rises) by the amount that autonomous imports rise (fall). (For convenience, we include this autonomous change in consumption under the single consumption column rather than having two columns for consumption.) Further, the consumption figures in the succeeding periods are different by this magnitude than they otherwise would have been, given the same changes in income. For example, in period 2 for Country A, $\Delta C = (3.0 \times .4) + 2.0$, rather than simply $(3.0 \times .4)$.[12] Also, note that the induced imports of one country are the induced exports of the other. The net trade balance (column 9) is deduced from columns 5–8. Finally, the current change in income is the sum of the changes in expenditure during the current period (columns 3, 6, 7).

With a rise in Country A's income and a fall in Country B's income, A experiences an increase in induced imports and a decrease in induced exports, thereby reducing her trade balance from the value obtaining immediately after devaluation. By what proportion will this initial balance be reduced by money income effects? If B_2 represents the final balance and B_1 is the initial balance after devaluation, B_2/B_1 may be termed the "final-balance ratio". This ratio

12. Machlup's tables are inaccurate in this respect. His figures for country A are satisfactory, for in his problem country A does not experience an autonomous change in imports. But his country B does have an increase in autonomous imports, and this decreases B's income because B's consumption expenditure falls by an equal amount. The $100.00 of autonomous imports "wipes out $100.00 of B income when people prefer to substitute the foreign product for home-made products" *(ibid.*, p. 54). However, Machlup does not indicate this (autonomous) fall in consumption in his tables, and the decreases in B's income are calculated by considering autonomous (but not induced) imports to be a direct determinant of income. Thus his tables for country B should be corrected by reducing the consumption column figures by the amount of autonomous imports.

Table I

(1) Period	(2) Past ΔY	(3) Ind ΔC	(4) Ind ΔS	(5) Ind ΔM	(6) Ind ΔX	(7) Aut ΔX	(8) Aut ΔM	(9) Net $\Delta(X\text{-}M)$	(10) Cur ΔY
				Country A: $c = .4$; $s = .3$; $m = .3$					
1		2.000				1.000	−2.000	3.000	3.000
2	3.000	3.200	.900	.900	−.300	1.000	−2.000	1.800	3.900
3	3.900	3.560	1.170	1.170	−.420	1.000	−2.000	1.410	4.140
4	4.140	3.656	1.242	1.242	−.477	1.000	−2.000	1.281	4.179
5	4.179	3.672	1.254	1.254	−.510	1.000	−2.000	1.236	4.162
6	4.162	3.665	1.249	1.249	−.531	1.000	−2.000	1.220	4.134
*	4.000	3.600	1.200	1.200	−.600	1.000	−2.000	1.200	4.000
				Country B: $c = .7$; $s = .2$; $m = .1$					
1		−1.000				−2.000	1.000	−3.000	−3.000
2	−3.000	−3.100	− .600	−.300	.900	−2.000	1.000	−1.800	−4.200
3	−4.200	−3.940	− .840	−.420	1.170	−2.000	1.000	−1.410	−4.770
4	−4.770	−4.339	− .954	−.477	1.242	−2.000	1.000	−1.281	−5.097
5	−5.097	−4.568	−1.019	−.510	1.254	−2.000	1.000	−1.236	−5.314
6	−5.314	−4.720	−1.063	−.531	1.249	−2.000	1.000	−1.220	−5.471
*	−6.000	−5.200	−1.200	−.600	1.200	−2.000	1.000	−1.200	−6.000

may be expressed in terms of the marginal propensities of the two countries.

B_2 equals the initial balance $(\Delta X - \Delta M)$ plus the difference in induced exports $(m_b \Delta Y_b)$ and induced imports $(m_a \Delta Y_a)$.

$$\frac{B_2}{B_1} = \frac{(\Delta X - \Delta M) + (m_b \Delta Y_b - m_a \Delta Y_a)}{(\Delta X - \Delta M)}$$

$$= \frac{\Delta Y_a (1 - c_a + m_b s_a/s_b) - (m_a \Delta Y_a + m_b s_a/s_b \Delta Y_a)}{Y_a (1 - c_a + m_b s_a/s_b)}$$

$$= \frac{s_a + m_a + m_b s_a/s_b - m_a - m_b s_a/s_b}{s_a + m_a + m_b s_a/s_b}$$

$$= \frac{s_a}{s_a + m_a + m_b s_a/s_b}$$

$$= \frac{1}{1 + m_a/s_a + m_b/s_b}.$$

With the propensities assumed above, $B_2/B_1 = .4$. That is, as illustrated in the table, the final balance is two-fifths the original balance. In terms of figure 2, the result of the income effects is to

shift the *OB* curve to *Ob* by moving it back toward the origin by three-fifths along all possible *OE* lines. Thus the balance is reduced three-fifths in terms both of dollars and of pounds[13].

Since *OB* is reduced the same proportion at every alternative exchange rate, the "optimum" rate, where $S_{\$}-D_{\$}$ is at a maximum, is unchanged by the income effects. But, of course, the absolute value of $S_{\$}-D_{\$}$ is reduced—in this illustration very substantially.

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13. A further comment is in order to clarify the relation between the figures and the table. Two positions of the demand and supply curves are given in figure I: the original situation before devaluation and the new situation immediately after devaluation. This shift in the schedules is "autonomous" and by construction, thereby giving the "*aut X*" and "*aut M*"—and "*aut C*"—values. But with the changes in national incomes, there are induced changes in several variables, including imports. The rise (fall) in expenditure on imports as income increases (decreases) implies a positive income elasticity of demand, defined here as

$$e_y = \frac{\Delta Q_m / Q_m}{\Delta Y / Y},$$

in which Q_m is the quantity of imports. Thus U.K. demand curves shift to the right, and U.S. demand curves decrease. With straight demand curves intercepting the axes, the demand curves in figure Ia and Id rotate, as we have seen, around the *X*-axis intercept as a result of the devaluation; the changes induced via the income multiplier, if shown, would involve rotation of all demand curves around the *Y*-axis intercept. (If there is assumed to be no "induced" change in the price of imports, and with $m = \Delta M / \Delta Y$, then $\Delta M = P_m \Delta Q_m$ and $m = (P_m \Delta Q_m)/\Delta Y$; finally, $m/P_m = \Delta Q_m / \Delta Y$. The value of m is given; ΔY is determined by the devaluation and the consequent multiplier effects. Once ΔY is determined, one may conceive of alternative levels of P_m, caused by reasons other than further alterations in the exchange rate. And ΔQ_m changes consistently with P_m, *e.g.*, as P_m rises by a certain multiple ΔQ_m falls by the reciprocal of that multiple, thus giving a "rotational" shift in the demand curve induced by the change in income.) This sort of consideration, while complicating exposition a bit, offers little conceptual difficulty—provided that the induced shifts in the curves are confined to the demand schedules. If, contrary to this model, it is assumed that the supply curves also are affected by income changes, not only the magnitudes but possibly the signs of changes in crucial variables will be altered. Cf. the approach—"all goods and services are assumed to be produced and sold at constant costs in terms of the selling country's currency" (p. 292)—of LAURSEN and METZLER, *ibid.*, and the comments of C. KENNEDY, "Devaluation and the Terms of Trade", *Review of Economic Studies*, XVIII (1949/1950), no. 1, esp. p. 29–31.

SUMMARY

Typically, theoretical treatments of the balance-of-payments effects of devaluation have been confined to direct price effects. This note extends the analysis to include effects induced by devaluation through changes in national income. The procedure followed is to indicate first the price effects of devaluation and then to superimpose the income effects.

The analysis of this two-country case is confined to a price-stable situation, *i.e.*, starting from a zero balance of trade, the price effects of devaluation improve the country's balance of payments in either the foreign or domestic currencies. With respect to the results in terms of domestic currency, there will thus be an excess of currency demanded by domestic exporters over currency supplied by importers.

The excess demand is an "injection" into the income stream. Domestic income will rise, and foreign income may fall, thereby tending to increase the imports and to reduce the exports of the devaluing country. The autonomous changes in imports and exports, stemming directly from the devaluation, are offset to some degree by the trade changes induced by alterations in national incomes. Comparing the final trade balance after reaching the new income equilibrium with the initial balance after devaluation gives the "final-balance ratio".

The elasticity of the balance of payments is determined by the elasticities of supply and demand for imported and exported commodities. The final-balance ratio is determined by domestic and foreign marginal propensities to import and to save. A given devaluation will achieve a greater improvement in the balance of payments the higher the elasticity of the balance of payments and the greater the final-balance ratio. Therefore, in order that devaluation result in a large improvement in the balance of payments, it is desirable that demand elasticities be large, supply elasticities be small, marginal propensities to import be small, and marginal propensities to save be large.

ZUSAMMENFASSUNG

Abwertungswirkungen über Veränderungen des nominalen Volkseinkommens. In der Regel beschränkte sich bisher die theoretische Erörterung der Abwertungswirkungen auf die Zahlungsbilanz auf die direkten Preiswirkungen. Der vorliegende Artikel erweitert die Analyse, indem auch jene Wirkungen einbezogen werden, die durch Veränderungen des Volkseinkommens entstehen. Es werden zuerst die Preiswirkungen dargelegt, auf welche alsdann die Einkommenswirkungen auftreffen.

Die Analyse erfolgt unter der Annahme, dass – ausgehend von einer ausgeglichenen Handelsbilanz zwischen zwei Ländern – durch die Preiswirkungen der Abwertung die Zahlungsbilanz des Abwertungslandes verbessert wird, ausgedrückt in fremder oder eigener Währung. Es wird sich somit ein Nachfrageüberschuss der Exporteure nach einheimischer Währung über das Angebot der Importeure an solcher Währung herausbilden.

Der Nachfrageüberschuss bedeutet eine Erweiterung des Einkommensstromes. Das inländische Einkommen wird sich erhöhen und das Einkommen des Auslandes kann zurückgehen, so dass die Einfuhr des Abwertungslandes steigende Tendenz, die Ausfuhr sinkende Tendenz aufweist. Die autonomen Veränderungen der Ein- und Ausfuhr, die unmittelbar von der Abwertung herrühren, werden infolgedessen in gewissem Grade ausgeglichen. Aus dem Vergleich der Handelsbilanz nach Erreichung des neuen Einkommensgleichgewichts und der Bilanz nach der Abwertung ergibt sich das Verhältnis, auf welches sich der ursprüngliche Handelsbilanzüberschuss vermindert hat («final-balance ratio»).

Die Elastizität der Zahlungsbilanz wird bestimmt durch die Elastizitäten von Angebot und Nachfrage für importierte und exportierte Güter. Die «final-balance ratio» wird bestimmt durch die inländischen und ausländischen Grenzneigungen in bezug auf den Import und das Sparen. Die Verbesserung der Zahlungsbilanz durch die Abwertung wird um so grösser sein, je höher die Elastizität der Zahlungsbilanz und je grösser die «final-balance ratio» ist. Damit die Abwertung zu einer massgeblichen Verbesserung der Zahlungsbilanz führt, ist es deshalb wünschbar, dass die Nachfrageelastizitäten gross sind, die Angebotselastizitäten dagegen klein, dass die Grenzneigungen in bezug auf den Import klein und jene in bezug auf das Sparen gross sind.

RÉSUMÉ

Effets d'une dévaluation par suite de variations du revenu national nominal. En règle générale, la discussion théorique des effets de la dévaluation sur la balance des paiements se limitait jusqu'ici aux répercussions directes des prix. Le présent article élargit l'analyse en considérant également les effets qui proviennent des modifications du revenu national. L'auteur expose d'abord les effets des prix, sur lesquels viennent se superposer ensuite les répercussions de la variation des revenus.

L'analyse est faite sous l'hypothèse que – en partant d'une balance commerciale équilibrée entre deux pays – la balance des paiements du pays dévaluateur sera améliorée par les effets des prix, et cela aussi bien en monnaie étrangère que nationale. Il se formera ainsi un excédent de demande de monnaie nationale de la part des exportateurs en regard de l'offre de telle monnaie de la part des importateurs.

L'excédent de la demande signifie un gonflement du courant des revenus. Le revenu national ira croissant et le revenu de l'étranger pourra fléchir, en sorte que les importations du pays dévaluateur tendront à augmenter et les exportations à diminuer. Les modifications autonomes des importations et des exportations qui découlent directement de la dévaluation, seront par conséquent compensées dans une certaine mesure. La comparaison de la balance commerciale, une fois le nouvel équilibre des revenus atteint, avec la balance après dévaluation, donne la *final-balance ratio*, c'est-à-dire indique à quel point l'excédent initial de la balance commerciale a diminué.

L'élasticité de la balance des paiements est déterminée par l'élasticité de l'offre et de la demande pour les marchandises importées et exportées. La *final-balance ratio*

est déterminée par les propensions marginales nationales et étrangères à importer et à épargner. L'amélioration de la balance des paiements par la dévaluation sera d'autant plus importante que l'élasticité de la balance des paiements sera plus forte et que la *final-balance ratio* sera plus grande. Par conséquent, pour que la dévaluation aboutisse à une amélioration notable de la balance des paiements, il est désirable que les élasticités de la demande soient fortes, que les élasticités de l'offre soient par contre faibles, que les propensions marginales à importer soient faibles et que celles à épargner soient grandes.

FIXED TECHNOLOGICAL COEFFICIENTS AND THE SHORT RUN COST CURVE

A *firm* producing a single output commodity and having available but one method of production, for which the technological coefficients[1] are all fixed is subject to a horizontal cost curve. If the availability of certain inputs is rigidly limited, *i.e.*, if there are capacity restrictions—an assumption appropriate to the short run—the horizontal part of the cost curve terminates abruptly. At this point the curve should be regarded as continuing vertically upwards.

The character of the short run cost curve is the same for a multiproduct firm if the output of all but one commodity is kept constant or if all outputs are varied in constant proportion.

A more interesting situation arises[2] if one output is varied and all other outputs are adjusted optimally in terms of the prevailing constant prices and the existing capacity limitations. The following statements may then be made:[3]

(1) Marginal cost of output is the opportunity cost of foregone production of other commodities within the capacity limitations. The opportunity cost of an output can be decomposed into a sum of opportunity costs of factor uses each weighted with the respective input coefficient.

(2) The opportunity costs of factor use depend only on the set of outputs that are produced (in positive amounts), not on their (relative or absolute) quantities.

(3) Hence marginal cost of producing various quantities of any particular commodity is a step function: it is constant except for jumps at points of changing product sets.

(4) Successive sections of the cost curve have increasing levels. The increase of opportunity costs with rising output of the commodities may seem paradoxical in view of the decrease in opportunities. The explanation is, of course, that as the output of one commodity is expanded, more and more lucrative alternative outputs must be foregone.

(5) The same sets of products cannot occur at two different costs levels of the marginal cost curve.

(6) Above a certain level of output of the commodity not all the factor availabilities may be used up in production—exceptions occur only if products can be produced with the use of only one limited factor. The opportunity cost of unutilized factors being zero, the opportunity cost of other factors must be relatively high by way of compensation.

(7) There is no rule regarding the length of sections and the height of jumps of the marginal cost curve; any step function is a possible outcome of some set of

1. Defined as the ratio of inputs to output.

2. In terms of Stigler's classification, this comes close to the case of "divisible but unadaptable plant". Each machine is assumed to be divisible in use but unadaptable as far as its input–output coefficients are concerned. (Cf. GEORGE STIGLER, "Production and Distribution in the Short Run", *Journal of Political Economy*, vol. 47 [1939], p. 305.)

3. Their rigorous derivation is part of activity analysis. Cf. T. C. KOOPMANS (ed.), *Activity Analysis of Production and Allocation*, New York 1951.

technological coefficients and capacities But each marginal cost curve terminates in a vertical line at the capacity limit.

(8) The capacity limit for producing a given commodity is the minimum of the input limits defined by availability ÷ technological coefficient for the various factors.

(9) The number of different commodities that make up an optimal product set need never exceed the number of independent capacity limits.

(10) Therefore the number of sections of the cost curve cannot exceed the number of different combinations of (1) as many products as there are independent capacities out of the (2) total number of products that the firm can possibly produce; but in general it will be less.

The preceding statements are valid regardless of which among the following situations prevails:

(a) There is but a single commodity which may be produced by various methods, each method is subject to constant technological coefficients.

(b) There are several products and the methods of producing each commodity are unique: for each product all inputs are limitational. Choice is among products rather than production methods.

(c) There is choice among products as well as production methods.

(d) There is joint production in the sense that each production activity produces (possibly) several outputs in fixed proportion to each other and to inputs.

(e) Production involves several stages; the various processes have factors and/or intermediate products as inputs and final and/or intermediate products as outputs.

(f) It is required that the net accumulation of intermediate products be zero.

(g) In addition to inputs of rigidly fixed supply, there are inputs of unlimited amounts at constant prices.

When all firms of an *industry* have cost curves composed of line segments of the same levels, the supply curve of the industry has the same discontinuities. But it is flatter in the sense that the horizontal sections are longer, being the sum of the corresponding sectors in the cost curves of firms.

When the levels of cost plateaus vary among firms, the supply curve of the industry attains a smoother shape. Its rate of increase depends on the frequency distribution of the various cost plateaus[4]. A unimodal frequency distribution for instance, gives rise to a cost curve which has the smallest slopes, and hence the greatest flexibility, at intermediate levels. A rectangular distribution generates a linear supply curve. The capacity limit of the industry is reflected in a vertical line or asymptote terminating the supply curve.

In the *long run*, neither the assumption of constant technological coefficients, nor that of rigid capacity limitations is justified. One may consider, however, an intermediate situation in which technological coefficients are constant, but factor availabilities variable. If all factors are perfectly divisible, then the capacities will be so adjusted that the marginal factor values, *i.e.*, the opportunity costs of factor use, are equal to the factor prices. If all factors are indivisible, this is still true,

4. According to the formula $\frac{dx}{dc} = f(c)$, where x = output, c = cost, f = frequency.

provided the firm can operate on a sufficiently large scale. Budget limitations and failure of prices to be independent of the scale may keep down the output range of the firm. In that case, the marginal factor values and the market prices may diverge widely. Consideration of short run costs is then particularly important for an efficient utilization of the imperfectly balanced capacities.

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BESPRECHUNGEN
COMPTES RENDUS – REVIEWS

JEAN-PIERRE DE BODT. *La formation des prix.* Analyse des rapports entre la théorie économique et la politique industrielle. Bruxelles 1955. De Visscher. VIII, 217 p.

The purpose of this study is defined in its sub-title "Analyse des rapports entre la théorie économique et la politique industrielle". Dr. de Bodt, like many other economists who have undertaken empirical research in industry in the past two decades, has found that the generally accepted theory of manufacturers' prices, based on the static equilibrium analysis of cost and demand curves, does not appear either to correspond with normal industrial pricing practice or to afford a complete explanation of the basis of entrepreneurial price decisions.

His contribution to the reconciliation of theory and practice falls into three sections. The first is a brief survey of the development of the theory of the firm up to about 1940; its origins in Adam Smith's *Wealth of Nations;* its general establishment as a cornerstone of economic theory in Marshall's *Principles;* its further refinement by Mrs. Robinson and Chamberlin in the 1930s and the beginning of doubt about its general validity at the end of this decade, when the Oxford enquiry into manufacturers' price decisions initiated the "full cost" controversy. There follows an analysis of manufacturers' pricing policy in practice, based on Dr. de Bodt's empirical research, "de l'autre côté de la barrière". He shows that the full cost approach provides the most realistic basis for describing this policy. The manufacturer generally calculates the direct cost of each unit of output on the basis of the material and direct labour required for its production. To this he adds a fixed margin for indirect costs, which, for him, include all other production and selling costs, and an additional profit margin, in the form of a fixed percentage addition to costs. There is no apparent attempt to secure an equilibrium between marginal costs and marginal receipts, in fixing prices, both because the manufacturer does not have the necessary data and because, although his price decisions are generally short term ones, he has also to take into account some long period considerations. But, although this "full cost" approach determines the initial price estimates, in the process of adjusting these prices to actual orders the indirect cost and profit margins tend to be flexible, in that they may be reduced in a period of general trade depression or, at any time, for purchasers who give orders that are large enough to permit a reduction in uncertainty or a fuller use of fixed capital equipment. This reconsideration of margins, and so of costs and prices, shows that marginal cost and demand considerations influence the entrepreneur, although he cannot use the tools of marginal theory to make his initial price decisions.

The second section includes an investigation of the more recent developments in the theory of the firm that have resulted from empirical research in a number of

industries. On the side of demand, these include the consideration of the problem of uncertainty, particularly the difficulty of fixing prices in advance of production and marketing, which has led to a new theoretical discussion of dynamic aspects of production planning that are outside the scope of static equilibrium analysis. The development of oligopoly in many industries has also led to a new theoretical analysis of entrepreneurial price decisions. Dr. de Bodt shows that this further development of price theory adds new support to the acceptance of full cost pricing, as a means by which the entrepreneur can take into account uncertainties and complications that are not included in the older, marginal, theory. On the side of costs, he discusses Saxton's "standard cost" analysis and Miss Brunner's introduction of "normal cost" considerations into the "full cost" analysis. These theoretical developments are regarded as helpful in relating pricing practice to theory. A manufacturer who uses "standard cost" accounting methods can identify, for each unit of output, not only direct raw material and wage costs, but also other production costs, which tend to be grouped together, by many manufacturers, as "fraix généraux", or fixed overhead costs, although, in fact, they contain many items of cost that vary with the type of product and volume of production. Standard cost pricing, in this way, provides data that helps the manufacturer to identify his marginal costs. The limit to his prices set by "normal costs" for the industry similarly indicates that his prices are influenced by general demand conditions that are part of the theoretical basis of marginal analysis. Dr. de Bodt concludes that the full cost theory only partially explains entrepreneurial price decisions, and that there is often "un travail ultérieur de 'marginalisation'", but he adds that the use of full cost methods enables the entrepreneur to take into account elements of uncertainty that are excluded from the marginal analysis.

The third section of the book is designed to illustrate, by concrete examples, the links that exist between the full cost approach to prices and marginal theory.

The first two sections of the book are by far the most interesting. For both the student and the economist engaged on empirical research in the micro-economic field they provide a useful summary of the current state of the debate between the supporters of the rival full cost and marginal theories. The analysis of pricing in practice, with its explanation of the entrepreneur's costing and price fixing methods and also of his motives for making full cost considerations the basis for his pricing decisions, is most illuminating; particularly the "marge de sécurité" in his full cost prices, to protect the entrepreneur against the consequences of miscalculation, and his need to incur additional costs, arising from under-used productive capacity, to provide a measure of flexibility in the face of short term changes in demand.

There are, however, some rather surprising omissions from the discussion of price theory. Hart's "expectation curve" analysis of entrepreneurial expectations is rejected but Shackle's alternative theory, based on entrepreneurial psychology, is not considered. The effect of the development of consumer advertising on price theory and practice is largely neglected, although the influence of advertising on the shape of a firm's demand curve is an essential part of the Chamberlin analysis and such selling expenditure is an important weapon in the oligopolist's armoury.

For manufacturers of consumer goods, in particular, advertising provides some protection against uncertainty (as Keirstead has noted in his *Theory of Profit)*; in the British women's clothing industry, for example, expenditure on consumer advertising often provides an alternative to the maintenance of under-used capacity, as a method of meeting uncertainty.

A further criticism is that the industries on which the empirical discussion is based are not named and this tends to result in an over generalised approach to the subject. Most of the examples of entrepreneurial price decisions are drawn from the textile industries and it can, perhaps, be assumed that Dr. de Bodt is most familiar with their pricing practices. This may explain the neglect of consumer advertising, which is of less importance for industries making mainly products for sale to other manufacturers, and the stress laid on the need for reserve capacity to meet short period increases in demand, which will result from the seasonal marketing policy of the clothing industry. A limitation of the scope of the study, particularly in its empirical applications in Section III, to a fairly small number of carefully defined industries, would have increased the validity of its conclusions.

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DEREK CURTIS BOK. *The First Three Years of the Schuman Plan* (Princeton Studies in International Finance, no. 5). Princeton 1955. International Finance Section, Department of Economics and Sociology, Princeton University. 79 p. $0.25.

Le projet de la C.E.C.A. avait fait, avant d'être mis en œuvre, l'objet de nombreuses publications, les unes hostiles, les autres favorables; mais, depuis 1953, aucune étude d'ensemble n'avait tenté de faire le point des mesures prises par la Haute-Autorité de Luxembourg, ni de porter sur l'activité de l'organisation un jugement, qui repose sur des données de fait, et non pas sur des prévisions, hasardeuses par essence. En apportant un bilan de cette activité jusqu'en 1955, l'étude de Derek Curtis Bok comble donc une lacune importante. Après deux chapitres très courts, consacrés l'un aux buts économiques et politiques de la C.E.C.A., l'autre à ses institutions, l'essentiel du travail s'attache à montrer en 43 pages les problèmes posés, les mesures prises en vue d'assurer le fonctionnement normal du marché commun: suppression des subventions et égalisation des taxes, suppression des discriminations ferroviaires et établissement de tarifs directs internationaux, comparaison des charges salariales et des taux d'intérêt, lutte contre les cartels, les ententes, y compris les organisations commerciales nationales du charbon. Le reste de l'ouvrage étudie les conséquences économiques et sociales de la C.E.C.A.

Non seulement ce livre comble une lacune, mais il apporte aussi un jugement – non conformiste d'ailleurs – sur la valeur de la C.E.C.A.; l'auteur a, à mon sens, une vue très juste de la situation en montrant qu'en dépit d'aménagements utiles

la C.E.C.A. n'a pu créer encore les conditions d'une juste concurrence, en particulier parce que la Moselle n'est pas encore canalisée. Dans la mesure – très grande au demeurant – où la C.E.C.A. devait constituer un test pour l'unification européenne, l'auteur estime très minces les chances de succès d'une pareille méthode appliquée à d'autres industries. C'est là, je crois, une vue rationnelle et qui n'est du reste pas avancée sans preuves. Il convient de féliciter l'auteur pour le sérieux, le caractère positif de son travail, j'ajouterais même par le courage dont il a fait preuve en apportant au système des critiques fondées, que bien peu, par excès de conformisme, se hasardent à publier au grand jour.

Université de Dijon (France) JEAN CHARDONNET

P. J. BOUMAN. *Einführung in die Soziologie.* Stuttgart 1955. Enke-Verlag. 179 S. Brosch. DM 10.70, Lw. DM 12.80.

Die Nachkriegsmode in Deutschland, die der Soziologie, zwölf Jahre als «jüdisch», «marxistisch» und «liberalistisch» diffamiert und verfehmt, nicht allein wieder zur verdienten Anerkennung, sondern geradezu zur Allerweltsbeliebtheit verhalf, scheint noch immer ungemindert anzuhalten. Noch immer ist die Soziologie *en vogue* und das Adjektiv «soziologisch» nur allzu oft ein *epitheton ornans*, das sich in Leitartikeln oder Zeitschriftenaufsätzen, im privaten Gespräch oder der forensischen Ansprache, auf der Parlamentstribüne oder gar auf dem Katheder einzustellen droht, wenn sonst die Begriffe fehlen. Unzweifelhaft entbehrt diese Allerweltsbeliebtheit oder jedenfalls -vertrautheit sehr häufig der rechten Vorstellung davon, was eigentlich Soziologie als Wissenschaft sei und zu leisten vermöge.

In höchst erwünschter Weise kommt daher den Bemühungen der deutschen soziologischen Gelehrten um klärende Grundlegung und Durchsetzung ihrer Wissenschaft die Übersetzung des an Umfang kleinen, im Original schon in sechster Auflage vorliegenden Werkes des Holländers P. J. Bouman zu Hilfe, das sich bescheiden eine «Einführung in die Soziologie» nennt. Es konzentriert sich in luzider Weise auf eine Einführung in Begriffsbildung und Probleme der Soziologie als selbständiger Wissenschaft, indem es das Schwergewicht der Betrachtung auf die «gesellschaftlichen Erscheinungen *als solche*» verlegt und eine begrifflich geklärte Vorstellung von dem «Inhalt und der Bedeutung des menschlichen Lebens in Gruppen» zu vermitteln sucht, wobei mit Recht Nachdruck auf distanzierende Abhebung zur Fragestellung, Problematik und Methodik der anderen Sozialwissenschaften gelegt wird.

Niemand möge dabei vorschnell das vorliegende, elegant geschriebene und sachkundig angelegte kleine Werk als zur «formalen» Schule der Soziologie gehörig abtun, die keinen rechten Begriff von den notwendig immer historisch mitbedingten gesellschaftlichen Gebilden und Prozessen zu geben vermöge, da die

Soziologie als Wissenschaft im Grunde «namenlose Geschichte» sei. Kein geringerer Zeuge als Karl Mannheim, hervorragender Repräsentant der Heidelberger kultur- und geschichtssoziologischen Schule, hat demgegenüber bereits 1932 ein für allemal klärend und unverändert gültig darauf hingewiesen, wie unerlässlich die erarbeiteten Grundbegriffe und -probleme der «formalen» oder «reinen» Soziologie für alle ihre Zweige und Unterdisziplinen seien, gleichsam die «vor die Klammer» gezogene einheitliche Kennziffer *(Gegenwartsaufgaben der Soziologie,* 1932). Aber mit dieser klärenden Grundlegung begnügt sich Bouman keineswegs. Nicht nur behandelt er das Verhältnis von Individuum und Gemeinschaft, sondern untersucht auch eingehend die grundlegenden Kategorien der Gruppen und Kollektiva, woran eine Analyse von Dorf und Stadt, die keineswegs die historischen Wandlungsprozesse ausschliesst, angehängt wird.

Damit aber nicht genug. Denn hierauf folgt eine, wenn auch jeweils knappe, die Hauptumrisse jedoch klar herausarbeitende Einführung in die wichtigsten soziologischen Unterdisziplinen, wobei nicht allein Rechts-, Wirtschafts-, Religions- und Kunstsoziologie behandelt werden, sondern auch der Kultur- und der Wissenssoziologie gedacht wird, ja sogar Seitenzweige wie die Kriminologie und die Soziologie des Bevölkerungswesens miteinbezogen werden. Alle Unterabschnitte sind dabei durchgehend mit sorgfältig ausgewählten Hinweisen auf die jeweils wichtigste weitere Literatur versehen, die es dem Anfänger erleichtern, selbständig auf der eingeschlagenen Bahn fortzuschreiten. Kurz, es handelt sich hier um ein wertvolles kleines Buch, dem nicht nur weiteste Verbreitung unter den Studenten der Soziologie, sondern unter den Gebildeten überhaupt zu wünschen ist, die an der Soziologie als Wissenschaft interessiert oder zumindest, aus den eingangs angedeuteten Gründen, um verständnisvolle Selbstklärung ihrer fundamentalen *termini* und Probleme bemüht sind.

Heidelberg (Deutschland) GOTTFRIED EISERMANN

FRITZ CRONER. *Die Angestellten in der modernen Gesellschaft.* Eine sozialhistorische und soziologische Studie. Frankfurt a.M. und Wien 1954. Humboldt-Verlag. 265 p. DM 9.50.

The spectacular growth of commercial and industrial bureaucracy over the last hundred years has become a central theme in the researches of social historians, sociologists and political scientists. More and more studies have been appearing over recent years of the remarkable changes brought about in the class balance of industrial societies through the expansion of the intermediary strata of administrative, technical and clerical personnel. Dr. Fritz Croner has made a noteworthy contribution to social science research on these problems through his analysis of the development of the new middle class in Sweden. In his volume on *Tjänstemannakåren i det moderna samhället* (Stockholm, Gebers, 1951) he presented the results of

an extensive sample survey of unionized white collar workers and tried to fit the findings into a broader framework of Swedish social history. This work has now become accessible to a wider circle of European social scientists in a German version. In this volume only a summary of the Swedish findings has been included: major emphasis has instead been given to the general discussion of basic concepts and theories in research on these developments in commercial and industrial bureaucracy. The German volume thus appears as a broadly conceived analysis of a generic category of phenomena: the Swedish data serve primarily to illustrate and concretize a set of generalizations.

In the first part an analysis is presented of different definitions of *Angestellte* and related terms in other major languages. It is concluded that fruitful concepts can be developed through the differentiation of a series of *organizational functions* filled by salaried employees: managerial, constructive-analytical, administrative-clerical, mercantile. The development of these functions is illustrated through a series of case studies of the growth of Swedish industrial firms: the typical progression of stages goes from the diffuse role of the entrepreneur-initiator through the gradual division of managerial and administrative tasks among family members and trusted kinsmen, to the differentiation of a great variety of interrelated functions, first in the "line" system, later in the "line-staff" system. This analysis follows well-trodden paths in organizational theory: its primary value lies in the concrete examples from Swedish industrial history.

In the second part of the volume a brief analysis is given of the over-all effects of these organizational developments on the national occupational structure. It is most regrettable that only Swedish data are presented in this section: a comparative analysis of labour force statistics from a number of industrialized countries could have given a much broader basis not only for the discussion of the different classifications of *Angestellte* but even more for the study of the general changes in social structure brought about with the development of large-scale industry. Happily, other sociologists have recently undertaken to fill the lacunae in this field: thus Reinhard Bendix's important volume on *Work and Authority in Industry* will include a detailed comparative analysis of the statistics on the growth of private bureaucracies.

In the third part of his work, Dr. Croner asks himself whether the *Angestellten* can be said to constitute a *social class* of its own. This is partly a terminological, partly an empirical question. Dr. Croner reviews some of the literature on definitions of "social class" and focuses particular attention on the Marxian contributions to this literature. The chapter on "Marxistische Klassentheorien" is of interest as an exercise in exegesis: it does not go into any such detail as *e.g.* Gurvitch, but it does give a systematic review of the major positions expressed by Marx and Engels. The exegesis does not always give the writers the benefit of the doubt: there is a tendency to impute contradictions in cases where differences in contexts can as easily explain the differences in usage. Much attention is given to the alleged contrast between the juridico-economic concepts of "class" and the "dynamic-political" concepts. Dr. Croner refers to the famous class definition given in *Der achtzehnte Brumaire* but fails to interpret this passage in its full context: Marx was

discussing the situation of the French peasants and made the point that as a group they could be said to meet *some* of his criteria for constituting a class but not *all*—their conditions of economic existence separated them from other classes in their way of life, their interests and their culture, but the material conditions of intercommunication had not allowed them to give concrete collective expression to this "we-feeling" and to develop national organizations for the defense of their interests. It is difficult to see in this passage any evidence of contradictory usage. It would on the whole seem more fruitful to start out from the assumption that Marx adhered to a multi-criterion concept and then interpret his particular usages and applications within this broader framework. Dr. Croner's own conceptualization goes much in the same direction: he suggests as the three basic "class" criteria similarity in economic conditions, similarity in social status and similarity in social values *(Wertungen)*. Marxists would have no quarrel with a concept of this kind: the main problem would lie in the empirical determination of the degree of "value community". This is basically a *political* problem: how far will the similarities in functions and roles provide a basis for consistent "we-feelings" and for concerted action through organized defense of common interests? Dr. Croner emphasizes as his conclusion that the *Angestellten* have indeed constituted themselves as a class in so far as they have developed their own organizations and thus accentuated their independence both in relation to the employer class and in relation to the class of manual workers. It is much to be regretted that Dr. Croner did not follow up this discussion through a comparative analysis of the role of the *Angestellten* in *national politics* in different countries. The data gathered in the Swedish sample survey on the social and political attitudes of the salaried employees were unfortunately not included in the German edition. It would be of great interest to compare, across a number of countries, the factors that determine the over-all allegiances of the salaried employees in the current political power struggles. A number of studies, such as those by Dahlström for Sweden, Bonham for England, Crozier for France, have given us some insight into these processes of political alignment but much remains to be done on comparative lines to fit the findings into a broader framework of sociological theory.

In the fourth and final part of his work, Dr. Croner gives a brief account of the major findings of his sample inquiry into the social origins of the unionized white collar employees in Sweden. The tables show consistently (1) that white collar openings are still predominantly filled by self-recruitment, by the sons and daughters of fathers in the same stratum, (2) that recruitment from working class families is significantly more frequent among the younger *Angestellten* than among the older, and (3) that working class recruits at all age levels are less likely to fill the higher positions in their organizations than their colleagues from bourgeois families.

These findings must be seen in the wider context of the over-all changes in Swedish labour force structure: the proportion of salaried employees could only have increased as much as it did through expanded recruitment from the families of farmers and workers. An adequate analysis of these relationships could only be undertaken on the basis of a cross-sectional study of intergenerational mobility of the type undertaken by Glass in Britain, Svalastoga in Denmark, van Heek in the

Netherlands. Within its limitations, Dr. Croner's study nevertheless represents a useful contribution to the growing body of knowledge about changing patterns of occupational recruitment in industrial societies: it deserves a place within the general framework of the mobility studies currently encouraged and co-ordinated on comparative lines through the work of the Research Committee of the International Sociological Association.

Dr. Croner's study would have been of greater interest if it had allowed some analysis of the effects of mobility, as an independent variable, on the formation of social and political attitudes. The study provides some evidence that salaried employees recruited from working class families differ from others in their allegiances: thus they are found to affiliate more frequently with the workers' unions (L.O.) than with the independent unions (T.C.O.)—this fits in with findings from Dahlström's later study of the attitudes of salaried employees, foremen, and workers. It would have been of interest to have much more detailed data on such relationships between personal life histories and political orientations. It is hoped that studies of the type undertaken by Dr. Croner will stimulate the planning of extensive comparative inquiries into such central problems of social and political change.

Institute for Social Research, Oslo (Norway) STEIN ROKKAN

WERNER HOFMANN. *Wohin steuert die Sowjetwirtschaft?* Zur Deutung der Sowjetgesellschaft von heute. Berlin 1955. Duncker & Humblot. 144 p. DM 9.60.

Ce petit livre d'une extraordinaire densité constitue une des meilleures synthèses du système économique de l'U.R.S.S. et de ses tendances actuelles de développement.

Certes, malgré la très grande clarté de l'exposé, il ne semble pas que l'ouvrage puisse être intégralement compris par quelqu'un qui n'aurait pas quelques connaissances préalables de la réalité soviétique. Mais, pour un lecteur tant soit peu averti, il présente, par la rigueur de ses analyses et par l'envergure de ses synthèses, un intérêt tout à fait exceptionnel.

La première partie commence par une analyse détaillée et approfondie de la nouvelle politique économique inaugurée par le discours de Malenkov du 8 avril 1953. Les manifestations de cette politique sont soigneusement observées dans les domaines les plus divers tels que le circuit des revenus, les principales proportions de la production, le commerce extérieur, les méthodes de la planification, la formation et la répartition de la main-d'œuvre. La nouvelle politique apparaît comme un changement profond ayant ses sources dans la logique du développement économique et social de l'U.R.S.S. Cependant, cette politique subit des modifications notables en février 1955. La priorité de l'industrie lourde est de nouveau

affirmée, les objectifs de l'industrie légère sont réduits, seule l'agriculture, totalement sacrifiée du temps de Staline, conserve les avantages qui lui furent accordés en 1953.

S'agit-il d'un abandon total de la nouvelle politique, auquel cas il serait impossible de lui reconnaître le caractère d'une tendance objectivement nécessaire au stade actuel de développement de l'U.R.S.S., ou s'agit-il plutôt d'une rectification partielle et provisoire provoquée par quelque force étrangère à l'évolution fondamentale de l'économie soviétique?

La réponse à cette question fait l'objet de la deuxième partie qui s'attache à découvrir la signification réelle de la nouvelle politique et des changements intervenus en 1955. Après avoir passé en revue les forces motrices de l'économie soviétique, l'auteur constate que l'évolution d'une société en voie d'industrialisation rapide doit nécessairement aboutir à une émancipation des élites qui actuellement ne disposent pas d'un pouvoir de décision à la mesure des responsabilités qu'elles assument et dont les besoins matériels et culturels – comme ceux d'ailleurs de toute la population – appellent une production de biens de consommation de plus en plus abondante et diversifiée. Le tournant de 1955 apparaît donc comme un écart accidentel greffé sur une tendance organique plus profonde. Il s'explique essentiellement par deux circonstances. D'une part, l'accroissement de la production des biens de consommation après 1953, tout en étant indispensable, a été trop rapide par rapport aux possibilités des industries de base; il portait donc en lui la nécessité d'une correction partielle en sens inverse. Et d'autre part, des changements importants sont intervenus dans le monde extérieur: l'industrialisation de la Chine ne peut se faire sans une participation décisive de l'industrie lourde soviétique; le réarmement de l'Allemagne occidentale semble renouveler la menace de l'encerclement capitaliste.

Mais le sacrifice de l'industrie légère ne peut être maintenu durablement, car il est en contradiction avec l'évolution de l'économie et de la société soviétique. Le retour à une politique de développement harmonieux de l'ensemble des activités économiques semble à la longue inévitable. Il faut donc s'attendre à ce que l'industrie de biens de consommation reprenne bientôt la place qui lui revient à côté de l'industrie lourde et de l'agriculture.

Ajoutons de notre part que, tout en acceptant les grandes lignes de ce raisonnement, nous n'excluons pas la possibilité d'une division du travail à l'intérieur du bloc oriental qui consisterait à confier une partie de la production industrielle de biens de consommation à certains pays de démocratie populaire tels que l'Allemagne orientale, la Tchécoslovaquie, la Hongrie et peut-être la Pologne. L'U.R.S.S. se réserverait ainsi le rôle du principal fournisseur de biens d'équipement ce qui serait de nature à consolider son emprise économique sur l'ensemble des pays du bloc.

Fondation nationale des sciences politiques, Paris J. MARCZEWSKI

W. A. Jöhr and H. W. Singer. *The Role of the Economist as Official Adviser.* London 1955. Allen & Unwin. v, 150 p. 15s.

This is a volume which one is apt to turn to with considerable interest inasmuch as it represents the first book-length attempt to indicate the function of the economic adviser. The events leading up to the writing of the book throw some light on the nature of the treatment. Thus, Professor Jöhr had written an earlier work on the role of the economist as adviser to national governments; this was reviewed by Dr. Singer of the United Nations; the review in turn induced Austin Robinson to suggest a collaboration between Jöhr and the reviewer. The present work centers around Jöhr's new treatment, each chapter of which contains remarks added by Singer with respect to the role of the economist in international organizations. About half of the volume is devoted to economic advice, the rest being taken up with ancillary matters such as the methods of economic analysis and the relative merits of liberalism and socialism.

The effort is marked "disappointing" by this reviewer, who works for an international organization, and also by several friends who are economic advisers to the United States government and who have read and commented on the book. If there is a principal weakness, it is that the authors failed to distinguish adequately between the role of the economic analyst and the economic adviser. Thus, much of the book is devoted to relatively simple explanations of the way the economic analyst operates when in the service of a government or an international organization. But to the typical economist this material comes mighty close to elaborating the obvious, and in a few cases the treatment actually is at a lower level than that found in some texts on elementary economics.

At no point did I notice a clear-cut statement of the essence of the advisory role, namely, what policy-makers are to be told is the weight to be attached to any given piece of applied economic analysis with respect to decision-making in the given situation. In short, the book gives the wrong impression when it suggests that the adviser and the analyst perform interchangeable roles. It is a pity that the distinction has not been drawn adequately, and the narrative shaped accordingly, because the advisory role is probably a more difficult one than that of the analyst in most situations related to decision-making. The analyst is free to develop his material along the lines that are known to all members of the profession. In particular, he must necessarily make some assumptions, explicitly or otherwise, in developing his analysis. Is it safe for the policy-maker to rely on the same assumptions, to the same degree? What elements not formally a part of the analysis are likely to have a significant bearing on the outcome if a decision is made as a logical step from the analysis itself? What are the advisers in related fields, and other key government decision-makers, thinking about kindred matters? What are the trends in public opinion in the general subject-matter area involved? It is elements of this kind that the adviser must deal with as he tries to *weigh* the significance of any given applied economic analysis itself—as he tries to exercise good *judgment* in the light of the analysis *and* other relevant considerations.

There is something else that I find missing in this book: the problem of ideological bias, which is probably relatively more significant in international organizations than in governments, especially the larger ones. Economic advisers run the gamut of institutional and political predilection. They have more or less favored positions; they sometimes "slant" their advice, even if unknowingly, by weighting items which they find congenial more heavily than their "intrinsic merit" or their consistency with observable reality warrant. These shortcomings rather quickly rise to the surface in big governments, mainly as a result of the play of interministerial discussions of the major issues and the policy choices open to top officials. In international organizations, on the other hand, the lone adviser often has a given area all to himself, or largely to himself. There are relatively few "built-in" offsets to ideological leanings. This is unfortunate in a way, since international organizations deal comparatively more with underdeveloped areas in which the rendering of advice is on a relatively marked individualistic basis without the checks and balances of policy-making such as we find in big government. At the same time, we must admit that the underlying problem situation is often a good deal simpler in underdeveloped areas.

The reader will find a number of instances in the book in which there is an interesting treatment of the way the economist applies economic method to the solving of problems. This material will repay reading on the part of all who are not advisers or advisers-to-be and seek to ascertain how other advisers view their role. We need a book that will fill the gap which the volume under review intended to bridge; future authors are likely to find that the Jöhr and Singer effort has removed some of the underbrush and in an indirect sort of way helped to chart the course.

Chevy Chase, Maryland (U.S.A.) VIRGIL SALERA

KENNETH K. KURIHARA (ed.). *Post-Keynesian Economics*. London 1955. Allen & Unwin. XVIII, 442 p. 30s.

The most valuable of this interesting, but uneven, collection of essays is Klein's survey of empirical work in testing and applying Keynesian theory. It provides, in addition to a useful summary of attempts at estimating the main propensities, an outline of the new model he and Goldberger have fitted to the United States for the years 1929–1941 and 1946–1950. This is an important advance which should receive technical discussion by reviewers of the much fuller account its authors have given in the North Holland Publishing Company's series of monographs on economic analysis. Here, we can only call attention to the advance and use it, perhaps, as a check upon the theoretical analyses of Kurihara's other collaborators.

An immediate casualty would seem to be Patinkin's brilliant attempt at rehabilitating the quantity theory. A set of three simple equations is shown to suffice for the demonstration that, under full employment, any increase of money leads to a proportionate rise of prices, and leaves interest *unchanged*. This follows if we use the Keynesian assumptions of aggregate demand depending on interest and income, and of liquidity preference depending on the same two variables. Patinkin is well aware of the lack of statistical connexion between interest and consumption or investment and so prefers to make aggregate demand depend on "real" money balances. The same conclusion still holds. Unfortunately, however, Klein's model gives little support to the idea that aggregate demand is influenced by such balances, although it must be admitted the model gave quite unsatisfactory forecasts for prices. Much more work is obviously needed before we shall have a really satisfactory theory of the price level.

Fully one-third of the contributors are concerned with problems of stability. Matthews, in a characteristically able essay, argues that full employment may well be associated with so unstable an equilibrium that only direct controls over investment can preserve it. The danger is that the marginal propensity to invest exceeds the marginal propensity to save; a positive disturbance would then start off a Wicksellian inflation, or a negative disturbance a "real" recession. Kaldor and Hicks have argued the other way, thinking that either growing bottlenecks in capital goods industries or a general full employment ceiling will cause investment to slacken off at high levels of output. But in the former case we should expect wider fluctuations in the prices of capital goods than in other prices, and in the latter case accelerating increases of prices as a boom went on. Neither expectation is supported by statistical evidence, and Matthews further argues that high profits and booming sales strengthen investment demand. Klein's model seems to confirm this; it gives a marginal propensity to invest, relative to non-wage income, exceeding marginal propensities to save out of farm income or out of profits.

Murad, nevertheless, worries that net investment must grind to a halt when capital has increased to such a level as requires the whole labour force to operate and replace existing equipment in consumer goods industries. Progress would still be possible in so far as a constant labour force in replacement could install better new equipment as old equipment wore out, but we are referred to previous articles for his demonstration that profits could not suffice to maintain full employment.

Kurihara reverts to Keynes's old vision of the Day of Judgment—low marginal efficiency of capital, minimum interest rates, and an appreciable propensity to save. There is, however, a way out. A "high-wage, low-profit" economy would both decrease saving and (thereby) hold back the declining marginal efficiency of capital. He has a mathematical argument (marred by a couple of misprints) that redistribution reduces employment so long as savings habits remain unchanged, but pins his faith to the curious idea that workers will come to save a smaller proportion of their income after this has been increased by redistribution.

Two authors see some hope in the Wicksellian inflation Matthews is concerned to prevent. Bronfenbrenner's hope, it is true, is a fading one. Secular inflation has had the great merits of keeping up demand, weakening saving, stimulating invest-

ment and making for progress by helping "active" at the expense of "inactive" groups. It has, perhaps unhappily, come to be treatened not by its defunct enemy, sound finance, but by the passing of money illusions. Consumers have come to demand stable prices and workers are demanding a "high-wage, low-profit" economy. Entrepreneurship and risk capital may fail if they succeed.

Vickrey has an ingenious argument that a stable rate of inflation, foreseen and accepted, could stave off the Day of Judgment. Under such conditions the money rate of interest would exceed the (low) "real" rate by the degree of inflation. A declining marginal efficiency of capital would thus be accompanied by a high, and even rising, money rate which, by stimulating the income velocity of circulation, could keep up aggregate demand. His technical argument, however, depends on assumptions that expenditures are affected by liquid balances and that the influence of the money rate of interest upon demand for money itself decreases as money interest rises. The former assumption is doubtful, and the latter untested. On the practical side, the proposal has obvious difficulties of acceptance, and Vickrey himself points out that there are limits to which interest can be raised without causing money to cease circulating.

Wide interest will be excited by Modigliani's and Brumford's essay on the consumption function. It has a misleading title because it makes an unnecessary flourish of utility theory in a model which depends on two basic assumptions having little to do with utility. The new and very important assumption is that personal saving depends not so much on this or last year's disposable income as upon the whole budget of expected incomes over working life together with plans for expenditures on retirement. To this is added Modigliani's old assumption that saving is a constant proportion of the expected budget. With these two, and a few auxiliary, assumptions, the authors deduce the following suggestive formula:

$$S=\left[\frac{M}{L}\right]Y+\left[\frac{N(L-t)-M}{L\cdot L_t}\right]\left[Y-Y^e\right]+\left[\frac{1}{L_t}\right]\left[A-\overline{A}\right]$$

where S is current saving, Y current income, Y^e expected average future income, A current assets and $\overline{A}$ assets appropriate to expected future income. L is life span, N working span, M retirement span, t present time, and L_t remaining life span at age t, and we have:

$$\overline{A}=\left[\frac{(t-1)\,M}{L}\right]Y^e.$$

Saving is thus thought to depend upon both current income and its deviation from the expected average of future incomes, and the appropriate coefficients will *vary* with expected years of work and retirement.

The authors claim that their formula harmonises with results of budget studies: with a common finding that the proportion of income saved is greatest for those whose income has increased, that it tends to rise with income grouping, and that it is more stable for relative than for absolute income position. They also deduce that income-elasticity of consumption would be greatest for incomes showing highest serial correlation, which agrees with Reid's empirical study. Klein had made an earlier study of "Assets, Debt and Economic Behaviour" *(Studies in Income*

and Wealth, vol. XIV), in which he derived coefficients for income, income change, age and assets; Modigliani and Brumford think their formula can be made to agree broadly with Klein's estimates except in regard to assets for which, they suggest, he adopted an unsatisfactory definition.

An application of the formula to time series data was published (posthumously) by Brumford in the *Economic Journal* (March 1956). It provided a very reasonable fit to American data for the period 1929–1949, *including the war years*. His application assumed constant coefficients, took changes in expected income as a linear function of recent change in actual income, gave expected assets as capital gains plus immediate past saving, and used a share price index to measure capital gains. These approximations may be questioned in so far as they could lead to another interpretation of the results than in terms of the new theoretical formula, but his achievement is a remarkable one and the formula most suggestive.

The remaining articles do not fall into any very clear pattern. Ichimura formulates a generalised theory of fluctuations incorporating Kaldor's, Hick's and Goodwin's models based on non-linear accelerators, and throwing interesting light upon them. This may well be, as the author suggests, the ultimate generalisation of that kind of cycle theory but, like most ultimate generalisations, it is rather arid. Timlin, by contrast, examines monetary policies in Canada with a view to illuminating the Keynesian theory. Her contribution is, in the main, a criticism of cheap money policy at high levels of employment and points to the conclusion that, under such conditions, low interest rates provoke inflation by weakening demands for money and bonds.

Stretton contributes a thoughtful, non-technical discussion of welfare problems associated with full employment. He succeeds in disturbing confidence in Keynes's optimistic liberalism. Tsura, who is obviously well versed in Marx's writings, skilfully brings out relations between Marxian and Keynesian aggregates. Dillard pleads, although not very powerfully, for further recognition of the non-neutrality of money beyond its "rather inconsequential impact through the rate of interest". Tarshis has a rather perfunctory essay on business saving. Bowen and Meier write on institutional aspects of fluctuations and might be thought to have demonstrated, once again, the poverty of institutionalism.

Kurihara's collection is thus a very fair sample of recent work along Keynesian lines. It has two real plums in the Klein and Modigliani-Brumford articles, and few contributions fall below a generally high standard of interest and competence. The book deserves to be widely read and will be valuable for advanced courses in macro-economics.

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C. G. F. SIMKIN

BEN LEHBERT. *Entwicklungstendenzen in der westeuropäischen Energiewirtschaft* (Kieler Studien 35, Forschungsberichte des Instituts für Weltwirtschaft an der Universität Kiel). Kiel 1955. 91 S. DM 10.–.

Die Arbeit Ben Lehberts stellt ein bemerkenswertes Beispiel dafür dar, wie auch heute noch Einzelpersonen wissenschaftlich wichtige Arbeiten auf quantitativer Basis zu verfassen vermögen. Lehbert gibt in der Tat zum erstenmal in der deutschsprachigen Literatur einen langfristigen Überblick, die Entwicklungstendenzen der westeuropäischen Energiewirtschaft einerseits, die der Energiewirtschaft der Montanunionländer andererseits betreffend.

Die Untersuchung setzt 1920 ein – mit einem besonders wertvollen Rückblick auf 1913 – und wird bis 1953 weitergeführt. Die Gesamtergebnisse bestätigen im wesentlichen das, was die Fachleute in grossen Umrissen schon wussten; die Quantifizierung der Einzelvorgänge ist aber von besonderem Wert, auch wenn man die relativ weiten Fehlergrenzen beachtet, auf die der Verfasser selbst hinweist.

Im ganzen hat sich nach Lehbert der Endverbrauch von Energieträgern von 1920 bis 1953 nur wenig vergrössert (+19%), obwohl in der gleichen Zeit die Bevölkerungszahl um 17,5%, die industrielle Produktion sogar um 137% zunahm. (Dabei wird unter Endverbrauch richtig verstanden der Verbrauch an Sekundärenergie, vermehrt um den Direktverbrauch an Primärenergieträgern; Verbrauch der Einfachheit halber und mangels genügender Unterlagen = Produktion plus Einfuhr minus Ausfuhr gesetzt.)

Die Gründe für dieses relative Zurückbleiben des Endverbrauchs bestehen nach Lehbert einmal in der Verbesserung des Wirkungsgrads der Energiewandler; dabei werden unter Energiewandlern zum Beispiel Motoren, Öfen, Lampen usw. verstanden. Hinzu kommt, dass sich bei manchen Energieträgern solche Energiewandler verwenden lassen, die einen höheren Wirkungsgrad haben. Dabei entsteht freilich die Frage der Umwandlungsverluste beim Übergang von der Primär- und Sekundärenergie.

Hand in Hand mit dem Vordringen der sekundären Energieträger ging ein grundlegender Strukturwandel in den Aussenhandelsbeziehungen. Westeuropa hatte vor dem Zweiten Weltkrieg noch einen Ausfuhrüberschuss; dieser ist nach dem Kriege in einen wachsenden Einfuhrüberschuss umgeschlagen – teils wegen der besonderen kohlenwirtschaftlichen Entwicklung in Grossbritannien, teils wegen des stark wachsenden Einfuhrbedarfs an Erdöl. Der Einfuhrbedarf an Erdöl wiederum wuchs sehr rasch an wegen des schnell steigenden Bedarfs vor allem im Verkehrssektor und wegen der Tatsache, dass Westeuropa zum Ausfuhrgebiet für flüssige Sekundärenergie wurde. «Europa hat somit in zunehmendem Masse auch auf dem Energiesektor die Stellung eines Rohstoffveredlers bekommen».

In der Montanunion zeigen sich im ganzen die gleichen Tendenzen; der Zug zur Veredelung ist aber noch ausgeprägter.

Zur Methode, die der Verfasser anwendet, sind nur einige wenige kritische Anmerkungen zu machen. Über die angewendeten Umrechnungsschlüssel, um zu

den Heizwerten zu gelangen, mag man in einigen Punkten etwas anderer Meinung sein; Lehbert lässt mit Recht hier alle Wahlmöglichkeiten offen.

Wirklich störend scheinen mir nur zwei Punkte. Der eine betrifft die Frage der Gebietsveränderungen und ihr Einfluss auf die Statistiken. Im methodologischen Anhang heisst es einfach: «Sämtliche Daten beziehen sich auf den jeweiligen Gebietsumfang der betreffenden Länder» (S. 41). Das ist nicht schlimm, wenn sich die Gebietsveränderungen innerhalb des betrachteten Gesamtgebiets vollziehen. (Die Saar bleibt in Europa, ganz gleich, ob sie in den Statistiken einmal mit Frankreich, einmal mit Deutschland erscheint.) Unangenehmer aber sind die Auswirkungen im Fall der deutschen Ostgebiete, die vor dem Kriege in «Westeuropa» erscheinen, nach 1945 aber einfach weggefallen sind. Dieses Verfahren führt zu einem prozentualen Rückgang der Braunkohle in Aufkommen und Verwendung der Primärenergie, der der wirklichen Entwicklung nicht gerecht wird. Veröffentlichungen des Deutschen Instituts für Wirtschaftsforschung (Berlin) und der Europäischen Wirtschaftskommission geben durchaus die Möglichkeit, die Grössenordnungen zu korrigieren. Vielleicht kann der Verfasser diesen Hinweis bei einer Neuauflage berücksichtigen.

Die zweite Bemerkung betrifft den Einbau der Zahlen über Wasserkraft in das Schema der Primär- und der Sekundärenergie. Lehbert führt die Wasserkraft unter Primärenergie mit einem Umrechnungssatz von 860 Kcal je kWh auf; dann erscheint in den Tabellen über die Sekundärenergie nur noch die Thermoelektrizität.

In den Energiebilanzen, die die Hohe Behörde zurzeit für die Länder der Europäischen Gemeinschaft für Kohle und Stahl aufstellt, erscheint Wasserkraft unter Primärenergie mit $\frac{860 \cdot 100}{70}$ Kcal, da auf dieser Stufe noch nicht die nutzbare Elektrizität, sondern die Wasserkraft vor ihrer Ausnutzung in der Turbine nachgewiesen werden sollte; für die Ausnutzung in der Turbine wurde ein Wirkungsgrad von 70% angenommen. Ähnlich wurde für die Erdwärme in Italien verfahren. Der Strom auf Basis Wasserkraft erscheint dann zusammen mit der Thermoelektrizität unter Sekundärenergie. Dieses Verfahren erscheint der Wirklichkeit besser angepasst. Im Verbundnetz wird letzten Endes «Strom» abgegeben; es kann dann keine Unterscheidung nach Wasserkraftstrom und thermischem Strom mehr gemacht werden. Aber auch dieser Punkt hat für den Wert der Lehbertschen Arbeit keine entscheidende Bedeutung.

Im ganzen darf man den Verfasser und mit ihm den Herausgeber der Forschungsberichte, Professor Baade, beglückwünschen. Mehr solche Arbeiten.

Luxemburg ROLF WAGENFÜHR

W. ARTHUR LEWIS. *The Theory of Economic Growth*. London 1955. Allen & Unwin. 453 p. 30s.

L'idée de croissance est passée, depuis quelques années, au premier plan des préoccupations des économistes. Elle n'est sans doute pas nouvelle dans l'histoire des choses humaines. Mais autrefois on ne cherchait pas à penser la croissance, on la vivait, on la constatait après-coup et cela suffisait. Aujourd'hui, craignant qu'elle se fasse mal, avec une intensité insuffisante ou d'une manière disparate selon les secteurs d'un même pays, ou de pays à pays, on veut la comprendre avant qu'elle ne se produise, en vue sans doute aussi de la diriger. D'une croissance réflexe ou spontanée on veut passer à une croissance consciente ou réfléchie. C'est en ce sens que l'on peut dire: ce n'est pas simplement le temps du monde fini qui commence, c'est aussi le temps du monde conscient, du monde qui veut savoir ce qu'il sera.

Mais on peut penser la croissance de bien des manières. On peut faire une théorie positive: étudier la croissance actuelle en la mesurant *(science is measurement)* dans tel ou tel pays; c'est la méthode statistique de Kuznets aux Etats-Unis. On peut décrire la croissance passée, pour une tranche d'histoire (la croissance de l'économie britannique de 1790 à 1850: Gayer, Rostow et Schwartz). La croissance future pourra être déduite d'une croissance passée correctement extrapolée. On peut faire une théorie rationnelle, générale, déductive (ROSTOW, *The Process of Economic Growth*, 1953). On peut proposer des modèles mathématiques de croissance, à la manière de Harrod ou de Domar. On peut encore tenter des considérations de type plus philosophique ou sociologique, en portant des jugements sur les conditions et les effets d'une croissance économique dans telle ambiance historique, en esquissant ainsi une théorie plus vaste de la civilisation.

C'est plutôt à ce troisième genre que se rattache cet ouvrage du professeur Lewis de l'Université de Manchester. Il n'est ni statistique, ni économétrique, ni historique. Il se situe à la frontière de la sociologie et de l'économie.

Comme l'auteur nous en fait lui-même la confidence, il s'agit d'une fresque, d'une carte. *(What I have done is to make not a theory, but a map.)* Le dernier grand ouvrage couvrant un pareil champ d'études (c'est l'auteur qui parle encore) aurait été les «Principes» de Stuart Mill (1848). Les écrivains après Mill seraient devenus plus sages. Mais voici que cent ans après, le professeur Lewis s'est laissé reprendre par l'ambition du grand philosophe. Il a eu plaisir à relire les vieux auteurs, il a voyagé dans les pays dits sous-développés de l'Afrique, du sud-est asiatique, des Indes. Va-t-il donc aboutir, étudiant la croissance, à une nouvelle vue désabusée sur l'humanité en mal de progrès, va-t-il à son tour, plutôt que de redouter le stagnationnisme, vanter en fin de compte les mérites d'un nouvel état stationnaire?

Si le livre était jugé par un économiste de stricte observance (et ce n'est pas le cas), on dirait que seul les chapitres sur le capital, chapitre 5: *Savings and Investments*, et sur *Population and Resources*, chapitre 6: *Population and Output, International Relations*, peut-être encore le chapitre 7: *Government* (notamment le problème fiscal) correspondraient à une théorie véritable du développement économique.

Mais précisément on n'élabore pas une théorie vraiment générale du développement économique en faisant abstraction des conditions d'environnement. L'atmosphère et le sol où s'effectuent les mécanismes économiques sont aussi importants à connaître que ces mécanismes eux-mêmes.

La moitié de l'ouvrage est consacrée à l'étude de ces problèmes de type psychologique (*The will to economize:* goût de l'aventure, coût de l'effort), de type institutionnel et sociologique (religion, famille, propriété...) et de type culturel (croissance et diffusion de la connaissance). Par exemple les économistes n'étudient pas l'ascétisme en tant que tel; et cependant au moment où les dimensions du monde se rapetissent, et où les tendances spirituelles des pays orientaux doivent être prises en considération, on comprend bien qu'une théorie de la croissance ne fassent plus abstraction de ces tendances.

L'ensemble de ces analyses très judicieuses forment bien les éléments d'une théorie générale. Je me demande pourquoi l'auteur a appelé *Appendice* ce qui est une conclusion très bien venue: *Is economic growth desirable?* Une telle question évoque bien la pensée de Stuart Mill. Si la croissance économique n'était pas désirable, cela ne voudrait-il pas dire précisément qu'il n'y a pas coïncidence entre croissance et progrès? La croissance, le mot le dit, c'est du vital, du matériel. Sans doute le vital, le matériel sont indispensables au progrès: on dira qu'ils sont condition nécessaire. Cela ne veut pas dire qu'ils soient condition suffisante. En analysant les coûts de la croissance, l'auteur le suggère fort bien dans ses dernières pages.

Mais puisqu'il revient à un français l'honneur de faire le compte rendu de ce substantiel et intéressant ouvrage britannique, lui sera-t-il permis de regretter l'absence de toute allusion à quelque auteur français préoccupé par ce problème. Pour ne parler que des disparus de la trempe de Mill, les vues d'un Auguste Comte ou d'un Augustin Cournot, hanté par la progression des idées à travers l'histoire universelle, n'auraient-elles pas été utiles, même pour juger de la croissance économique du monde contemporain?

Université de Paris HENRI GUITTON

EDWARD NEVIN. *The Mechanism of Cheap Money.* A Study of British Monetary Policy 1931–1939. Cardiff 1955. University of Wales Press. XIII, 346 p. 25s.

Cet ouvrage commence très bien. Le premier chapitre sur l'abandon de l'étalon-or est plein d'excellents passages. Il y est bien indiqué que l'étalon-or au 19e siècle ne fonctionnait pas automatiquement. «Il avait besoin d'une direction, et donc d'un directeur.» Mais la situation d'entre les deux guerres mondiales était si différente de celle du passé que le système monétaire antérieur ne pouvait plus durer. L'abandon de l'étalon-or est attribué au déplacement du centre de contrôle de l'organisation monétaire mondiale (la cité de Londres ne pouvait plus jouer

ce rôle, et aucune autre place financière n'était capable de le jouer aussi bien qu'elle), puis à la rigidité croissante des prix, enfin à la recherche de la stabilisation des économies.

Les fondements de la politique monétaire nouvelle, inaugurée après le 21 septembre 1931 sont ensuite bien exposés en termes très clairs et désormais classiques. La monnaie est définie comme l'ensemble des avoirs liquides d'une nation, le taux de l'intérêt comme le prix payé pour obtenir des liquidités, et comme relié aux trois motifs de demande indiqués par J. M. Keynes, demande en vue des transactions, demande de précaution, demande de spéculation. L'abondance monétaire étant ensuite considérée comme jouant un rôle, non seulement sur le mouvement des prix, mais aussi sur le niveau de l'investissement, de l'activité et sur la répartition des charges de la croissance de l'économie, l'auteur peut indiquer quelles sont les raisons pour lesquelles la politique de maintien systématique d'un faible taux de l'intérêt a été adoptée: on a voulu éviter la baisse du niveau des revenus monétaires et surtout assurer un niveau élevé de l'emploi. – Tout cela est très exact, mais pas très original.

Mais tout cela n'est qu'une entrée en matières; le but du livre, c'est de montrer comment cette politique a été mise en œuvre en Angleterre de 1931 à 1939, à quelles difficultés elle s'est heurtée, et comment on a triomphé de celles-ci. Sans aucun doute, l'étude de ces détails est très instructive. On en tire une impression assez optimiste: la Banque d'Angleterre a bien gardé le contrôle du marché monétaire, les fonds prêtables ont été abondants, un «boom» de la construction de maisons d'habitation a pu se produire.

Cependant l'auteur ne présente pas de conclusion sur la valeur du système, et se garde de dire si celui-ci aurait pu durer au-delà de 1939, si la seconde guerre mondiale n'avait pas eu lieu. Il n'y a à peu près rien dans ce livre sur le caractère inflationniste d'une politique systématique de «cheap money». Sans doute, l'auteur indique bien en finissant que lorsqu'on se refuse à relever le taux de l'intérêt et donc à adopter un contrôle *quantitatif* sur la création du crédit, on est cependant amené à exercer une politique sélective sur la distribution du crédit. Mais il n'ose pas comparer nettement les vertus de ces deux politiques. Le lecteur ne trouve donc pas réponse aux principaux problèmes qu'il se pose aujourd'hui.

En fait, E. Nevin ne *pouvait* pas aboutir à une conclusion théorique rigoureuse. En effet, il s'est trop cantonné en une étude de l'avant-guerre. Son travail eût été beaucoup plus intéressant, s'il avait pu montrer la politique de «cheap money» aux prises avec les difficultés d'une période de guerre, ou de reconstruction et de plein emploi, si l'enquête avait pu porter aussi sur la période allant de 1939 à 1950. L'auteur aurait pu indiquer aussi comment, pour arrêter les menaces d'inflation de 1945 à 1950, sans relever le taux de l'intérêt, les autorités britanniques durent utiliser les ponctions fiscales sur les revenus, les subventions et le rationnement. Il aurait pu dire pourquoi, en fin de compte, la Grande-Bretagne avait renoncé en 1950 à cette politique. Faute d'avoir prolongé son étude dans le temps, l'auteur n'a pas pu donner une complète vue d'ensemble sur le système qu'il a exposé.

Université de Paris EMILE JAMES

JAN A. RICHMOND. *Roman Britain.* The Pelican History of England, vol. I. London 1955. Penguin Books. 240 p. 2s. 6d.

In 1948 the third edition of the late Professor Felix Staehelin's *Die Schweiz in römischer Zeit* initiated practically a new phase of up-to-date describing and interpreting the social and economic phenomena of the life in a Roman provincial territory. Now a research publication about Roman Britain is at our disposal at last which is smaller in size than Professor Staehelin's book, but otherwise well comparable with this brilliant work. A first chapter is devoted to the military history of Roman Britain. Three chapters on "Towns and Urban Centres", "The Country Side", and "Economics" follow which will be of special interest to the readers of *Kyklos*. A fifth chapter on "Religious Cults", an extensive bibliography and a, perhaps, slightly too brief Index conclude the book. In the Index, p. 94, s.v. "Coal", the items "Forests" (p. 131, 133), and "Infant exposure" (p. 117) are missing, to give a few examples.

Chapter I is the best political, strategical, and tactical survey about the military and garrison problems of Roman Britain which has appeared so far. Chapter V is not as brilliant, but is very useful and contains many novel observations of a well experienced excavator about the religious phenomena pertinent to the population of Roman Britain. Unfortunately this chapter is somewhat incomplete because some important recent discoveries about Gallo-Roman religion in France, on the Rhine, and on the Upper Danube, and especially much of the recent French, Belgian, Swiss, Austrian, and German research in this field has not been considered in interpreting the rather interesting British monuments.

On the other hand, the three social and economic chapters of this book are brimful of stimulating and novel observations of which I only have space to allude to those of more than local importance. Romano British towns were small, as a rule, London, Bath, Cirencester, St. Albans, and Wroxeter being exceptions. Many so-called village sites of Roman Britain turn out to be something like native farms, large estates of a special kind. Here a Celtic clan head lived supported by the rents paid by his tenants and retainers, a pre-Roman system of land tenure which could be romanized by the new masters without difficulty as a so-called *patrocinium*. What the author has to say about the various plough types which were used in the different parts of Roman Britain, the Roman system of draining the British fen country and of exploiting the farmers settled here on state land will be of great interest to the medieval historian also. These farmers had to pay no less than three fifths of their harvests to the Roman government, as excavations of storage structures have made obvious. Roman pasturing and forest economy, Roman lead, tin, iron, and coal mining in Britain are similarly well described.

Professor Richmond, exactly as Professor Staehelin for Roman Switzerland, has been able to prove that marked delapidation of public buildings in Late Roman cities of Britain like Verulamium (St. Albans), Lindum (Lincoln), Viroconium (Wroxeter), and others did not mean the end and, perhaps, as excavations seem to indicate, even not a decline of the local urban and market activities. In addition,

the large farms and their villae in the countryside of Roman Britain and the half romanized villages of the province florished more than ever in the fourth and even the early fifth centuries A.D. Clear evidence of comparatively intensive money economy has been forthcoming here from coin finds which go at least up to 530 A.D. Exactly as Professor Staehelin has proved for Switzerland, the Late Roman centuries in Britain were not characterized by permanent and marked symptoms of decline, and even the so-called Dark Ages of both countries were of a higher social and economic pattern than earlier scholarly generations have maintained.

Everywhere in this survey not only the evidence as described by Professor Richmond is of high interest, but also his quite intentional and obvious omissions. To give one example, in *Symbolae Osloenses* (27 [1949], p. 141 f.; 28 [1950], p. 105 f.) I tried to prove, a few years ago, with methods similar to those of Professor Furtwaengler in the famous and historic case of the Thiara of Saitaphernes, that a widely publicized acquisition of the British Museum of remarkable silver utensils, the Mildenhall Hoard, contains modern forgeries. I am, as is only natural, gratified to find that the Mildenhall Hoard is now no more referred to in this book.

The history of Roman Britain was organized originally on modern scientific principles by one of the best pupils of the great Theodor Mommsen, Professor F. Haverfield. Professor Richmond who has recently been called to Oxford University has finally shown in this brilliant book that Haverfield's royal mantle is now on his shoulders by right, and we shall look forward with eagerness to his future discoveries and research discussions.

University of Toronto (Canada) and Giessen (Germany) F. M. HEICHELHEIM

GIORGIO ROLETTO. *La costruzione economica sovietica: formazione, struttura, tendenze*. Milan 1955. Giuffrè. XII, 291 p. Lit. 2,000.

If we want to get to know the Soviet régime or world, or the Soviet way of life, either we can start from the utterances of the Russian rulers and ruled themselves, or we can consider another point of view: base our studies on an analytical and reasoned comparison between "West" and "East". It would be of great interest to draw a parallel between the ideologies, the aspirations and the programmes of the various classes of the "Capitalist" world, on the one hand, and the Soviet way of life, on the other. From a different aspect, it would be useful to investigate whether the "purges" which preceded and have accompanied this régime are inevitably inherent in the process of formation of the Socialist structure (in expectation of the Communist one), or whether they were due to accidental factors. Finally, to say nothing of all the other problems, a forecast could be attempted of the effects of the industrial revolution (automation) on the Western and on the Eastern ways of life respectively.

These ideas and observations are suggested by reading Roletto's book, the

main object of which is to compare the economic potential of Russia (or of the Soviet bloc) with that of the other economic powers or groups of powers (cf. pages 131, 107, 110). An attempt to measure comparative economic phenomena is, from the scientific point of view, undoubtedly original and the investigation under review has the merit of not being confined to a mere elaboration of statistics, since the Author presents the argument with a wealth of erudite and organic information and keen observations. Indeed, after examining the natural environment as an anthropogeographical, economic and geopolitical factor, he goes on to investigate the juridical-constitutional and demographic structure of the U.S.S.R., finally arriving at a study of "human" landscapes and the spirit of civilisation as a factor in the economy. Then, before passing on to the strictly economic part, there is a short passage on the Russian expansion, and he then goes on to tackle the five-year-plan policy, socialisation, economic technology, agriculture and industrialization; the investigation finally deals with commercial relations, both vis-à-vis foreign countries and at home, and with communications.

It is not appropriate here to follow the exposition, which, let it be repeated, is excellently documented and set out; it seems more fruitful to take up a fundamental point on which the Author himself shows reserve, but which we are indebted to him for having brought to light and clarified: Although we are not permitted to know what the future plans of the Soviet bloc will be (p. 285), is it not, nevertheless, lawful to note what part of the Western—of mankind's—way of life the Soviet régime has had to absorb? And, supposing that there has been some absorption, will it not influence, if it continues, the development of the Soviet economic potential?

Let us consider the question we have raised in relation to two groups of quotations. The first is concerned with the progressive rebirth of human individuality, whether in the form of the qualification of labour and variations in wages (pages 148 and 169), of the increase in the quantity of consumer goods (pages 124, 137, 186), or of the adoption of principles and ideas (prices, money, credit, profit, interest, cost, enterprise: cf. page 143 et seq.) which undoubtedly, by giving the individual a modicum of liberty, distinguish him from the masses. It is true that, *à propos* of these last-named factors, it is claimed that in a Socialist economy they have a very different function from that which they fulfil in a Capitalist economy (cf. Académie des sciences de l'U.S.S.R.: *Manuel d'économie politique*); nevertheless, it cannot be denied that the most radical of the technical-economic revolutions has not been able to do without them.

On the contrary—and this is the second group of quotations—with regard to Hodgman (*Soviet Industrial Production 1928–1951*, Harvard Univ. Press, 1954), he has prepared himself for a task of very profitable research work: He reviews the index figures indicating the value of Soviet production (cf. Roletto p. 145), using coefficients derived from the Russian organization and connecting them in such a way that they become intelligible in terms of our way of life. The result is that the prodigious Russian progress, reduced from quantities in kind to values, i.e. to more complete and significant index figures, loses a considerable part of its upward movement (for quantities in kind, cf. Roletto, p. 195 onwards).

Now—and this is the doubt to which the objective and intelligent work of the Author gives rise—if the Soviet régime incorporates human values from our way of life, if in the light of these principles its rate of economic growth is not, thus, out of the ordinary, does it not seem rather probable that the explosive phase of the Soviet economy has now reached a stage in which it is being overtaken?

Università di Modena (Italia) MODESTINO R. MANFRA

(Translated from Italian by Miss Joan U. Killip, West Bridgford, Nottingham, United Kingdom)

CLARENCE SENIOR and DOUGLAS MANLEY. *A Report on Jamaican Migration to Great Britain.* London 1955. Colonial Office. 67 p. 2s. 6d.

In contrast to most other overpopulated countries Jamaica and Puerto Rico have a ready outlet for free emigration of their population surplus; migratory movements of their nationals are hardly at all affected by existing restrictions. The Jamaicans enjoy the right of free entry into the United Kingdom, the Puerto Ricans can freely immigrate into the United States. But in both cases the resulting flow of migrants has not been absorbed as smoothly as sending and receiving countries would have wished. There are, of course, some differences, *e.g.* in the ethnic origin of the newcomers and in their distribution—the Puerto Ricans are largely concentrated in New York while there are fairly strong nuclei of Jamaican immigrants in ten or twelve British cities. Nevertheless, the problems created by the mass-immigration of Puerto Ricans into the U.S.A. and of Jamaicans into Britain are very similar, although they are perhaps less conspicuous in Britain.

It was therefore fortunate that in considering suitable measures to facilitate the absorption of the newcomers in Britain the Jamaican Government could draw on the wide experience of the Puerto Rican Government by securing the advice of Dr. Clarence Senior, Chief of the Migration Division of the Department of Labour of Puerto Rico, and lecturer at Columbia University, New York. With Douglas Manley—the son of Jamaica's Chief Minister and lecturer at the University College of the West Indies—as co-author, he has produced a realistic and sympathetic study of the present situation based on an extended visit to Britain. An enquiry into the nature and effect of migration from the point of view of the Jamaican economy is to supplement the present report.

Illogically as it may appear at first sight, rising standards of living and rising real income per head in recent years are giving momentum to the outward movement from Jamaica. While in the years immediately after the war a few hundred stowaways represented the most important group of immigrants from the West Indies, about 20,000 Jamaican immigrants who had paid their full fare—either from their own savings or through help from relatives or friends—have arrived in Britain in 1955. As the report points out, an income per head of £61 in Jamaica

compares with £231 in the United Kingdom (1950 figures) and "overfull" employment in Britain provides a powerful incentive to immigration.

But the resistance of organised labour against the employment of immigrants has still to be overcome in many instances. While the Jamaicans—in contrast to aliens—are free from any legal restrictions, many feel, perhaps sometimes without justification, that they are still exposed to colour prejudices in their career as well as in private life. The report pays tribute to help and encouragement which is given to the West Indian immigrants by the Colonial Office and various other agencies, and to "the generosity with which friendly local people rendered advice and assistance". "Perhaps because of the relative mildness of the attitudes of the British to the foreigners, adjustment has been taking place, slowly but steadily".

Nevertheless it would be a mistake to be complacent about the present situation. Dr. Senior concludes his brilliant analysis with a number of recommendations. The need for programmes both at home and in the receiving area are discussed under three headings: (1) Orientation at home and "en route". (2) Organisation of a West Indian Welfare Office in the United Kingdom. (3) Immediate action to be taken. They envisage various improvements of the present setup rather than a new approach to the problem of absorbing the immigrants from the West Indies. The fact that most of these recommendations have been accepted in principle by the parties concerned and are being implemented indicates the success of Dr. Senior's and Mr. Manley's mission.

London JULIUS ISAAC

WALTER A. WEISSKOPF. *The Psychology of Economics.* Chicago 1955. The University of Chicago Press. VIII, 266 p. $4.00.

Cet ouvrage porte un sous-titre qui limite déjà de façon appréciable le sujet indiqué par le titre: l'auteur présente son livre comme «une application originale de l'analyse psychologique et culturelle aux auteurs qui ont formé la pensée économique». Il se réfère d'ailleurs expressément à des courants de pensée fort divers, depuis les théories philosophiques et économiques traditionnelles jusqu'à la psychanalyse, l'anthropologie et la psychologie sociale. Dès l'exposé de la méthode suivie, qui se trouve au début de l'ouvrage, nous avons l'impression que, si l'information est large, les principes de recherches sont formulés avec une rigueur insuffisante. *La psychologie économique, pour rester vraiment scientifique, a besoin d'un cadre de pensée très strict,* que nous ne trouvons pas toujours ici.

Le problème, tel qu'il est posé par l'auteur, est pourtant fort bien défini: On constate que les économistes sont souvent attachés, de façon apparemment inexplicable, à des préjugés méthodologiques, par exemple la «rationalité» et «l'omniscience» des sujets économiques constituent presque toujours la base des grandes théories; de même on s'est référé longtemps, et l'on se réfère souvent encore, à la

notion d'un équilibre économique qui n'est «qu'une vue de l'esprit». Pourquoi ces attitudes intellectuelles? L'auteur pense qu'il faut *étudier la psychologie des grands économistes* pour le comprendre. Cette étude doit être *scientifique* et tenir compte des données *subconscientes*, et sur ces points nous sommes d'accord avec M. Weisskopf.

Cependant les développements consacrés successivement à Adam Smith, Ricardo, Malthus, Engels, Marx et Alfred Marshall sont inégaux. Les passages qui se rapportent à la psychologie de Smith et une partie de ceux qui concernent Ricardo et Malthus soutiennent des thèses défendables. On peut admettre que chez Smith il y a hésitation entre une mentalité «précapitaliste» et une psychologie ressemblant à celle du «calviniste de Max Weber»; on peut soutenir également que les théories libérales, mais pessimistes, de Ricardo révèlent une «mauvaise conscience» et que cet auteur est partagé entre l'utilitarisme de l'homme d'affaire et un sens de la justice, déterminé, sous certains de ses aspects, par ses origines israélites. M. Weisskopf élabore, sur ces points, des suggestions intéressantes et explique, peut-être, les hésitations ou «ambivalences» de ces auteurs, pour les théories de la valeur notamment.

Nous ne pouvons le suivre, par contre, lorsqu'il utilise la psychanalyse pour opposer, dans sa quatrième partie, un «symbolisme masculin», qui serait celui des classiques, à un «symbolisme féminin», attribué à certains socialistes. La terre, symbole féminin, serait «combattue» pour cette raison, par Ricardo (théorie de la rente) et par Malthus (insuffisance des subsistances) tandis que Engels, défenseur du prolétariat et des faibles, serait favorable aux symboles féminins. Marx, assez curieusement, est rangé parmi les tenants du principe masculin, car il est ricardien, mais il défend la masculinité non plus dans le père, mais dans le fils «synthèse» au surplus du masculin et du féminin. Nous pensons que de telles applications de la psychanalyse sont pour le moins aventureuses.

Nous abordons, dans la dernière partie de l'ouvrage une étude qui nous paraît mieux fondée, avec les passages relatifs à Alfred Marshall, présenté comme un représentant du rationalisme, mitigé avec le «moralisme de l'époque victorienne». C'est aussi avec raison que l'auteur montre pour terminer que la théorie économique actuelle se tourne de plus en plus vers l'étude de l'irrationnel.

Le livre de M. Weisskopf éveillera certainement l'intérêt du lecteur par ses suggestions et par l'originalité des points de vue soutenus; il aura eu le mérite de bien poser le problème de la psychologie des économistes, mais il reste loin, en de nombreux passages, de solutions vraiment scientifiques.

Université de Strasbourg (France) P. L. Reynaud

CHARLES WOLF, Jr., and SIDNEY C. SUFRIN. *Capital Formation and Foreign Investment in Underdeveloped Areas.* (Maxwell School Series 1.) Syracuse 1955. Syracuse University Press. VIII, 134 p. $3.00.

This "analysis of research needs and program possibilities", as the subtitle calls the book, is perhaps one of the best examples of the futile mass of literature piling up in the United States learning centres on a subject with which the authors are mainly acquainted through the academic pastime of "model building".

In discussing their subject the authors give advice as to the program of research on three subjects: (1) the entrepreneurship, which they think is lacking in the underdeveloped areas and thus not bringing to fruition the available capital; (2) the technological aspects of underdevelopment and the need of optimum use of capital where, very sensibly, the problem of adapting the technical equipment to the supply of labour and capital is raised; and (3) foreign investment. In the last chapter they refer to "other research needs" among which the "Malthusian breakthrough" is devoted a few lines.

A characteristic feature of the study is that the long annotated bibliography lists only (repeat: only) publications in English language and the earliest such publication the authors confess to have consulted is dated 1934, the next oldest 1938, and the remaining 217 of the 219 titles listed are post World War II. No wonder, then, that the authors talk of the 15th century Reformation and 14th century Renaissance, and quite seriously put into their program, for example, "a closer study... of the precise relationship between the Reformation... and the emergency of entrepreneurship" and recommend to study what was "the organic pattern of cause and consequence (in this) instance of broad social change? What is there that is reproducible in this pattern?" (p. 33.) The chapter on "Technological Alternatives and the Optimum Use of Capital" ends by the surprising programmatic question for further study: "What was there in the economic situation of England and the world generally in the 18th century that would have made the prospective leading sector role of the cotton textiles industry predictable?" By hoping to find a reply to this question the authors believe to be able to find the future "leading sectors" for the underdeveloped countries for which they advise to search. It appears not to occur to them that a study on spot of present situation would be more fruitful, and that their historical problems have been solved long ago by European economists and historians.

Such are some of the features of the program of study which should produce the solutions to the problems of "underdevelopedness" (a new word coined by the authors). One wonders what is more surprising, the courage of the authors in believing that historical processes may be changed and re-directed by means of pure academic reasoning, or their confessed innocence of how these processes have been going on up to now. In these circumstances the frankness with which they approach the chosen subject by admitting in the middle of their study that "one of the vexed problems of underdeveloped countries is the very name!" (p. 35) deserves the fullest praise. Needless to say that the authors start their study by

giving a "traditional model" of an underdeveloped country but dismiss it on the same page continuing bravely to pile up advice to countries of which the definition is one of their problems.

The majority of authors discussing the problem of underdeveloped countries seem not to realise (or do not wish to do so) that the objects of their study are mainly countries with very old civilisation and history and that their "underdevelopment" can only be understood in the historical perspective, and not by market research or a supply of missing entrepreneurs, know-how or capital, without fitting them into the organic development of the country concerned. The "underdevelopment", whatever different authors may mean by it, is not a status: it is a process as the development is one, and those prophets who come with the gospel of development looking for defects to be amended or improvements to be made[1] have had and will have many bitter disappointments if they wish to graft the features of a developed country on an "underdeveloped" one. One should remember the ruins of the industry artificially created by Mohammed Aly in Egypt more than hundred years ago, or for that matter the recent experiment of Peron in Argentina which brought a flourishing country to the very verge of ruin. Or should one forget the disastrous situation of Turkey forcibly "developed" since the Ata Türk with the support of gratis dollar millions from the U.S.A.? One does not find any reference to such cases (and there are many more) in the programs of Messrs. Wolf and Sufrin, although these deserve a most painstaking study.

This is not to say that a beginner in planning the development of an underdeveloped country will not find in the book many useful hints to the problems he should study before starting on his career.

Cairo (Egypt) N. KOESTNER

1. Like the P. 4 expert fresh off the plane from America lecturing next evening on the necessity of replacing waterbuffaloes in a country where the waterbuffaloe is the basic asset of the agriculture, by—imported—pedigree cattle.

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